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**UNITED STATES DISTRICT COURT  
 NORTHERN DISTRICT OF CALIFORNIA**

ANIBAL RODRIGUEZ, SAL CATALDO,  
 JULIAN SANTIAGO, and SUSAN LYNN  
 HARVEY individually and on behalf of all  
 other similarly situated,

Plaintiffs,

v.

GOOGLE LLC,

Defendant.

Case No.: 3:20-cv-04688-RS

**DECLARATION OF MICHAEL  
 LASINSKI IN SUPPORT OF  
 PLAINTIFFS' MOTION FOR CLASS  
 CERTIFICATION**

Judge: Hon. Richard Seeborg  
 Courtroom 3 – 17th Floor  
 Date: October 5, 2023  
 Time: 1:30 p.m.

**DECLARATION OF MICHAEL LASINSKI**


I, Michael Lasinski, declare as follows.

1. Counsel for the *Rodriguez* Plaintiffs retained me to provide expert analysis and, if requested, expert testimony. I have personal knowledge of the matters set forth herein and am competent to testify.

2. I submit this declaration in connection with Plaintiffs' Motion for Class Certification.

3. Attached is a true and correct copy of the Expert Report that I prepared in connection with this matter, dated February 20, 2023. The opinions I provided therein are true and correct to the best of my knowledge.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed this 17th day of July, 2023, at the Ankura offices located at 220 E. Huron, Suite 470, Ann Arbor, MI 48104.

/s/ 

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

Case No. 3:20-cv-04688-RS

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ANIBAL RODRIGUEZ, SAL CATALDO, JULIAN SANTIAGO, AND SUSAN LYNN HARVEY,  
INDIVIDUALLY AND ON BEHALF OF ALL OTHER SIMILARLY SITUATED,

*Plaintiffs,*

v.

GOOGLE LLC,

*Defendant.*

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EXPERT REPORT OF MICHAEL J. LASINSKI

February 20, 2023

CONFIDENTIAL – ATTORNEYS’ EYES ONLY

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## 1. EXECUTIVE SUMMARY

- As described in this report, and consistent with my prior work and experience, I have undertaken certain analyses to calculate class-wide unjust enrichment and actual damages for the two classes alleged in the Fourth Amended Complaint.
- As described in this report, and consistent with the work I have done in other cases, including class cases, it is my opinion that the discovery in this case can be used to quantify the monetary relief sought by Plaintiffs on a class-wide basis, for both Classes and for the full Class Period.
- As described in Section 7, it is my opinion that the most appropriate and reliable bases for quantifying Google's unjust enrichment from the alleged wrongful conduct include financial data that Google produced in this matter and Google's contemporaneous financial impact analyses relating to certain settings and privacy controls.
- As described in Section 7, my analyses of Google's unjust enrichment are segmented by Google product area and liability scenario. This segmentation is intended to assist the trier of fact in determining Google's unjust enrichment under two liability scenarios identified by Counsel, namely that the alleged wrongful conduct caused Google to be unjustly enriched by an amount equal to either 1) the portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads revenues and profits attributable to Google's collection, saving, and/or use of WAA/sWAA-Off Data for purposes of tracking advertising conversions ("Scenario One"), or 2) the portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads revenues and profits attributable to Google's collection, saving, and/or use of WAA/sWAA-Off Data for purposes of serving and monetizing advertisements ("Scenario Two").<sup>1</sup> As detailed in the attached schedules and summarized in the figure below, I have determined that Google's unjust enrichment (as measured in [REDACTED] under Scenarios One and Two totals approximately [REDACTED] and [REDACTED], respectively, during the period July 1, 2016 through December 31, 2022.<sup>2</sup> These Scenario One and Two amounts represent approximately [REDACTED]% and [REDACTED]%, respectively, of Google's U.S. revenues [REDACTED] [REDACTED] from App Promo, AdMob, and Ad Manager for apps during that same period.<sup>3</sup>

<sup>1</sup> As discussed below and used throughout this report, "WAA/sWAA-Off Data" is intended to collectively refer to all data that Google collects relating to user activity on non-Google mobile applications by way of the Firebase SDK and/or Google Mobile Ads SDK while a user is signed into Google and has WAA or sWAA turned off.

<sup>2</sup> Schedule 1.1. As discussed in Section 7, [REDACTED] account for approximately [REDACTED]% to [REDACTED]% of Google's total booked revenues and are [REDACTED] on Google's App Promo and AdMob income statements.

<sup>3</sup> Schedule 16.1.

**Figure 1**  
**Unjust Enrichment Damages<sup>4</sup>**

	Scenario One	Scenario Two
App Promo		
AdMob		
Ad Manager		
Total		

- As described in Section 8, it is my opinion that actual damages attributable to the alleged wrongful conduct can be determined as a function of the payments necessary to incentivize an individual to knowingly surrender the choice to keep activity on mobile apps private and allow an organization to track all app activity data. I have identified and considered various indicators of both the payments that Google and other organizations have paid to individuals to obtain their activity data and the fees that individuals have paid to various organizations in their attempts to increase online privacy and/or avoid tracking. In my opinion, the most probative indicator is derived from one aspect of the monthly compensation structure to participants in the Ipsos Screenwise Panel, a consumer research study conducted for Google by Ipsos. While compensation to Ipsos Screenwise Panel participants can vary based on numerous factors, it is my opinion that the baseline payment to participants of \$3 per month for using a Screenwise meter app on a single mobile device represents a conservative indicator of the monthly payment necessary for an individual to knowingly surrender the choice to keep their app activity private and allow Google to track all app activity data, regardless of that individual's WAA and/or sWAA settings. While the Screenwise compensation structure applies this \$3 payment per device per month, it is my opinion that actual damages through December 2022 can be conservatively measured by applying this \$3 payment [REDACTED] during the Class Period through December 2022. Based on the available data and my calculations described in Section 8, the application of this \$3 payment [REDACTED] yields total actual damages of approximately [REDACTED] through December 31, 2022.<sup>5</sup>
- A relevant input to my analysis of actual damages was the data produced by Google regarding U.S. Google accounts for which sWAA was turned off at any time during the four-year period between July 27, 2016 and July 27, 2020. While Google has not produced similar data for the complete Class Period to date, even these truncated records indicate that, among approximately [REDACTED] U.S. Google accounts that were ever active during this period, approximately [REDACTED] sWAA turned off at some point. In my opinion, this demonstrates that a [REDACTED] of users have (or at some point had) sWAA turned off.<sup>6</sup>

<sup>4</sup> Schedule 1.1.

<sup>5</sup> Schedule 10.1.

<sup>6</sup> Schedule 12.7. See also GOOG-RDGZ-00187010 at tab "sWAA"; Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to Interrogatory No. 12, p. 6.



- As described in Sections 7 and 8, while my current calculations of unjust enrichment and actual damages cover the period July 1, 2016 through December 31, 2022, I could readily update these calculations to cover subsequent periods through the date of trial. Relatedly, to the extent that the trier of fact determines that the calculation of unjust enrichment or actual damages should start on a date later than July 1, 2016, the calculations attached to this report can be readily modified to reflect that alternative period.
- As described in Sections 8 and 9, I conservatively estimate that there are approximately [REDACTED]. Based on these estimates, my unjust enrichment calculations translate to an average of approximately [REDACTED] per class member for Scenario One or approximately [REDACTED] per class member for Scenario Two, while my actual damages conclusion translates to approximately [REDACTED] per class member.<sup>7</sup>
- As described in Section 9, my analyses can be readily used as common proof in part because they can be adjusted to calculate and assess unjust enrichment and actual damages for different periods of time and Classes (or subclass(es)) depending on any rulings by the Court and findings by a jury. All of these calculations can be readily apportioned across the two Classes and among Class members.

## 2. QUALIFICATIONS / BACKGROUND

1. I am Michael J. Lasinski, a Senior Managing Director at Ankura Consulting Group (“Ankura”) and head of the Intellectual Property Group. Previously, I was the founding member of 284 Partners, LLC (“284 Partners”), a professional services firm focused on IP valuation, litigation consulting, IP acquisition and licensing strategy, and transactional services. Over the past twenty-eight years, I have assisted clients, including corporations, law firms, government entities, and investors, in understanding and evaluating the financial aspects of intellectual property.
2. My consulting practice has focused on the financial aspects of intellectual property since 1995. I have valued intellectual property and businesses in the context of licensing, sales, mergers, acquisitions, investments, tax matters, and litigation, as well as many other contexts. During my professional career, I have completed hundreds of valuations of intellectual property assets. I have spoken on the topic of intellectual property valuation, litigation, licensing, and tax matters throughout the U.S. and internationally.
3. I am President-Elect of the Licensing Executives Society International (“LESI”), the umbrella organization of national and regional associations for licensing executives, and I am a past President of the Licensing Executives Society United States and Canada (“LES”). LES is one of the country’s largest intellectual property licensing trade organizations. I am a past Division Chair of the American Bar Association’s IP Section. I am a former Chair of the Valuation and Taxation Committee of LES and a former Vice-Chair of the Intellectual Property Owners Association’s Valuation and Taxation Committee. I have also been named one of the World’s 300 Leading IP Strategists by Intellectual Asset Management.
4. I have been retained to provide expert testimony in other federal, state, tax, and arbitration proceedings. I have also been retained by both taxpayers and the IRS to determine intellectual property value and royalty rates in transfer pricing and other tax-related transactions. In addition, I

<sup>7</sup> Calculated as [REDACTED]; (\$ [REDACTED]); and [REDACTED], respectively.

was retained by a Federal Monitor to set royalty rates for a company that was subject to a deferred prosecution agreement from the U.S. Department of Justice. A list of cases in which I have provided expert testimony is provided in my curriculum vitae (attached as Appendix A of this report).

5. I hold a Bachelor of Science in Electrical Engineering (Summa Cum Laude) and a Master of Business Administration (High Honors) from the University of Michigan. I am a Certified Public Accountant (“CPA”) licensed in the state of Illinois. I am also Certified in Financial Forensics (“CFF”) by the American Institute of Certified Public Accountants, and I am a Certified Licensing Professional (“CLP”) initiated by the LES.
6. Ankura is being compensated for my work in this matter at a rate of \$795 per hour. Ankura is being compensated for the work of other Ankura consultants assisting me on this matter (as is my common practice, working at my direction and with my supervision) at hourly rates of less than \$795. No part of my compensation, or that of Ankura, depends on the outcome of this litigation.
7. I understand that I will be excluded from any Class recovery in this case.<sup>8</sup>

### 3. STATEMENT OF LIMITATIONS REGARDING THE USE OF THIS REPORT

8. This report was prepared in connection with *Rodriguez v. Google L.L.C.*, Case No. 3:20-cv-04688-RS, filed in the United States District Court for the Northern District of California. This report may not be used for any other purpose without the express written consent of Ankura. Moreover, this report contains proprietary information designated as “CONFIDENTIAL” and “HIGHLY CONFIDENTIAL – ATTORNEYS’ EYES ONLY” under a Stipulated Protective Order entered in the United States District Court for the Northern District of California. Accordingly, no part of this report or its contents may be used outside of this litigation, or published or shared without adherence to the applicable legal standards governing such publications.

### 4. ASSIGNMENT / ASSUMPTIONS

9. I was retained with Ankura by counsel for the Plaintiffs in this action (“Counsel”) to provide expert analysis and, if requested, expert testimony regarding the measures of monetary relief that may be appropriate if liability is found against Google LLC (“Google”) for the alleged wrongful conduct described in Plaintiffs’ Fourth Amended Complaint.<sup>9</sup>
10. My assignment in this matter includes assessing the feasibility of identifying and quantifying various measures of monetary relief tied to Plaintiffs’ claims, including that which I have described below as Google’s unjust enrichment and Plaintiffs’ actual damages during the period July 1, 2016 through December 31, 2022.

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<sup>8</sup> Fourth Amended Complaint, January 4, 2023, p. 66.

<sup>9</sup> As detailed in the Fourth Amended Complaint, Plaintiffs contend that Google’s wrongful conduct includes violations of the Comprehensive Computer Data Access and Fraud Act (“CDAFA”), invasion of privacy, and intrusion upon seclusion. As also detailed therein, “Plaintiffs” include Anibal Rodriguez, Sal Cataldo, Julian Santiago, and Susan Lynn Harvey. Fourth Amended Complaint, January 4, 2023, pp. 40-41, 62-69. I understand from Counsel that unjust enrichment, actual damages, nominal damages, and injunctive relief are available remedies for these remaining claims.

11. My investigations in this matter began with the necessary assumption that liability would be found against Google for the alleged wrongful conduct. This assumption does not imply that such liability exists, nor does it imply that I have been engaged to provide opinions about liability issues.
12. Based on the Fourth Amended Complaint and instructions from Counsel, I assume the following:
- The class period began on July 1, 2016 and is ongoing (the “Class Period”).
  - There are two classes defined in the complaint as follows:
 

*Class 1 – All individuals who during the Class Period (a) turned off “Web & App Activity,” or supplemental “Web & App Activity,” and (b) whose mobile app activity was still transmitted to Google, from (c) a mobile device running the Android operating system (OS), because of the Firebase SDK and/or AdMob SDKs, on a non-Google branded mobile app.*

*Class 2 – All individuals who during the Class Period (a) turned off “Web & App Activity,” or “supplemental Web & App Activity,” and (b) whose mobile app activity was still transmitted to Google, from (c) a mobile device running a non-Android operating system (OS), because of the Firebase SDK and/or AdMob SDKs, on a non-Google branded mobile app.<sup>10</sup>*

## 5. INFORMATION CONSIDERED

13. In connection with my work in this matter, I or Ankura personnel working at my direction reviewed and assessed the following types of information:

Documents produced by Google, including:

- Google internal analyses, memoranda, and presentations;
- Google internal correspondence;
- Google financial records.

Publicly available information, including:

- Company websites;
- Corporate financial filings; and
- Publicly available articles, press releases, and similar materials.

Deposition testimony of Google personnel and corporate designees (with exhibits), including:

- Arne de Booij; Senior User Research Manager;<sup>11</sup>
- Greg Fair, former Senior Product Manager, Privacy;<sup>12</sup>
- Steve Ganem, Group Product Manager, Google Analytics;<sup>13</sup>
- Sam Heft-Luthy, former Product Manager;<sup>14</sup>

<sup>10</sup> Fourth Amended Complaint, January 4, 2023, p. 65-66.

<sup>11</sup> Deposition of Arne de Booij, February 7, 2023.

<sup>12</sup> Deposition of Greg Fair, October 2, 2022.

<sup>13</sup> Deposition of Steve Ganem, October 28, 2022.

<sup>14</sup> Deposition of Sam Heft-Luthy, February 8, 2023 (rough transcript).

- Belinda Langner, Product Manager, App Campaigns;<sup>15</sup>
- Francis Ma, Director of Product Management, Firebase;<sup>16</sup>
- Eric Miraglia, Senior Director of Product Management;<sup>17</sup>
- David Monsees, Product Manager, Footprints;<sup>18</sup>
- Rahul Oak, former Group Product Manager, App Ads Innovation;<sup>19</sup>
- Christopher Ruemmler, Software Engineer, Security, Trust, and Privacy;<sup>20</sup>
- Daniel Stone, former Group Product Manager;<sup>21</sup>
- Edward Weng, Product Manager, AdMob;<sup>22</sup> and
- Xinyu Ye, Software Engineer.<sup>23</sup>

Written discovery, including:

- Google's responses to written discovery served by Plaintiffs, including Google's responses to Plaintiffs' interrogatories and requests for admission.
14. I also relied upon discussions with Jonathan Hochman, Plaintiffs' technical expert, and Mark Keegan, Plaintiffs' survey expert, and the results of a survey performed by Mr. Keegan (the "Keegan survey results"). My staff and I were also provided access to a document platform where we were able to independently search for and access any and all documents produced by Google in this case.
  15. My consideration of such information is consistent with my standard practice and also the practices of my peers who evaluate financial damages in commercial litigation. The documents I have relied upon in developing my opinions are identified in this report, the attached schedules, and the attached Appendix B. This report includes all information required under Federal Rules of Civil Procedure 26(a)(2)(B). The balance of this report contains a summary of my current opinions and bases for those opinions.
  16. It is important to note that the opinions and conclusions contained in this report are based on the information that has been made available to me to date. I understand that additional information relevant to the determination of damages may become available subsequent to the issuance of this report. Accordingly, my opinions and conclusions contained herein are subject to change based on further developments in, or relevant to, this case, such as additional discovery, the testimony of other fact or expert witnesses, and/or rulings of the Court. Additionally, I may prepare demonstrative exhibits to help me explain or illustrate concepts contained in this report at trial.

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<sup>15</sup> Deposition of Belinda Langner, December 15, 2022.

<sup>16</sup> Deposition of Francis Ma, October 28, 2022.

<sup>17</sup> Deposition of Eric Miraglia, October 25, 2022.

<sup>18</sup> Deposition of David Monsees, September 15, 2022.

<sup>19</sup> Deposition of Rahul Oak, November 18, 2022.

<sup>20</sup> Deposition of Christopher Ruemmler, September 9, 2022.

<sup>21</sup> Deposition of Daniel Stone, November 15, 2022 (rough transcript).

<sup>22</sup> Deposition of Edward Weng, September 23, 2022.

<sup>23</sup> Deposition of Xinyu Ye, February 9, 2023 (rough transcript).

## 6. BACKGROUND

17. For the purpose of understanding the current matter, I provide below certain background information regarding Google, AdMob, Ad Manager, App Promo, Google Analytics for Firebase, and Google's Web and App Activity and Supplemental Web and App Activity settings.

### 6.1. Google

18. Google is a wholly-owned subsidiary of Alphabet Inc. ("Alphabet") and the largest business within the Alphabet collection of businesses.<sup>24</sup> From a financial reporting perspective, Google is comprised of two segments: Google Cloud and Google Services.<sup>25</sup> The Google Cloud segment generates revenue from fees received for the Google Cloud Platform, which provides customers with scalable infrastructure, and from fees received for Google Workspace cloud-based collaboration tools for enterprises.<sup>26</sup> The Google Services segment covers core products and platforms including those which Google categorizes as Ads, Android, Chrome, Gmail, Search, and YouTube.<sup>27</sup>
19. The Google Services segment generates revenues primarily by delivering advertising that appears on Google Search ("Search Ads"), YouTube ("YouTube Ads"), and Google Network properties ("Display Ads").<sup>28</sup> In its Form 10-K for the fiscal year ended December 31, 2022, Alphabet represented that more than 79% (*i.e.*, approximately \$224.5 billion) of its total 2022 revenues (*i.e.*, approximately \$282.8 billion) were generated from online advertising.<sup>29</sup>
20. Google generates advertising revenues from its own platforms by selling advertisement placements within Google Search results pages, as well as within users' Gmail accounts, in the Google Play marketplace, and in Google Maps.<sup>30</sup> Google also generates revenues through the placement of advertisements on YouTube results pages, from video advertisements users view prior to or during a selected YouTube video, and from embedded YouTube video links appearing on non-Google webpages and apps.<sup>31</sup>

<sup>24</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 4. See also, "G is for Google" per Alphabet at <https://abc.xyz/> (accessed February 10, 2023).

<sup>25</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 4. Google also classifies certain of its pursuits as "Moonshots," which Google identifies as "high risk, high reward" projects. See Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 5. Notwithstanding how the term "Google services" has been used in this litigation, this report uses the term "Google Services" in the context of Google's financial disclosures.

<sup>26</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, pp. 6, 29.

<sup>27</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 5.

<sup>28</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, pp. 6, 28.

<sup>29</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, pp. 9, 32. I note that the share of total revenues generated from online advertising has ranged from approximately 80% to 88% over the 2016 through 2021 period. See, for example, Alphabet Form 10-K for the fiscal year ended December 31, 2021, p. 33; Alphabet Form 10-K for the fiscal year ended December 31, 2019, p. 29; Alphabet Form 10-K for the fiscal year ended December 31, 2017, p. 28.

<sup>30</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 28.

<sup>31</sup> "Ads on embedded videos" at "YouTube Help" per <https://support.google.com/youtube/answer/132596?hl=> (accessed February 10, 2023) and "Bring your story to life with Video ads" per Google Ads at <https://ads.google.com/home/campaigns/video-ads/> (accessed February 20, 2023).

21. Google generates additional revenues through advertisers placing ads on non-Google webpages and mobile apps that comprise “Google Network properties.”<sup>32</sup> In its online resources for Google Ads, Google publicly describes the “Google Display Network” as a collection of over two million websites, videos, and apps that reach over 90% of Internet users across the globe.<sup>33</sup> These network members display ads on their properties through the use of Google’s sell-side advertising platforms including AdMob, Ad Manager, and AdSense.<sup>34</sup> Some of these advertisements are App Promo ads, which are described in Section 6.4.
22. Google explains in its SEC filings that it generates revenues by serving the “right ads at the right time”<sup>35</sup> and, in its online product support pages, Google explains that its targeting methods allow advertisers to “reach people based on who they are, their interests and habits, what they’re actively researching, or how they’ve interacted with [the advertiser’s] business.”<sup>36</sup> Google also explains that personalized advertising works by employing online user data to target users with more relevant advertising content and increase advertisers’ return on investment.<sup>37</sup> To offer targeted advertisements, Google collects, stores, and uses large amounts of users’ data.<sup>38</sup> Google uses “the information shared by sites and apps to deliver [Google’s] services, maintain and improve them, develop new services, measure the effectiveness of advertising, protect against fraud and abuse, and personalize content and ads.”<sup>39</sup> Google’s methods of collecting, storing, and tracking user data across devices provides Google with a detailed picture of each user’s activity.<sup>40</sup>
23. Google is also financially incentivized to track “conversions,” which Google publicly describes as a tool that shows advertisers “what happens after a customer interacts with your ads – whether they purchased a product, signed up for your newsletter, called your business, or downloaded your app.”<sup>41</sup> Google notes that, “[w]hen a customer completes an action that you’ve defined as

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<sup>32</sup> “Compare Ad Manager, AdSense, and AdMob” per Google Ad Manager Help at <https://support.google.com/admanager/answer/9234653?hl=en> (accessed February 10, 2023). See also Alphabet Form 10-K for the fiscal year ended December 31, 2022, pp. 6, 28.

<sup>33</sup> “Reach a larger or new audience with Google Display Network targeting” per Google Ads Resources at [https://ads.google.com/intl/en\\_id/home/resources/reach-larger-new-audiences/](https://ads.google.com/intl/en_id/home/resources/reach-larger-new-audiences/) (accessed February 10, 2023).

<sup>34</sup> “Compare Ad Manager, AdSense, and AdMob” per Google Ad Manager Help at <https://support.google.com/admanager/answer/9234653?hl=en> (accessed February 10, 2023); “About App campaigns” per Google Ads Help at <https://support.google.com/google-ads/answer/6247380?hl=en> (accessed February 10, 2023). I note that Google internally refers to its mobile app advertising campaign type as App Promo, but publicly uses the term App Campaigns to refer to the same.

<sup>35</sup> Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 6.

<sup>36</sup> “About audience targeting” per Google Ads Help at <https://support.google.com/google-ads/answer/2497941?hl=en> (accessed February 10, 2023).

<sup>37</sup> “Personalized Advertising” per Advertising Policies Help at <https://support.google.com/adspolicy/answer/143465?hl=en> (accessed February 10, 2023).

<sup>38</sup> “How Google uses information from sites or apps that use our services” per Google Privacy & Terms at <https://policies.google.com/technologies/partner-sites?hl=en-US> (accessed February 10, 2023).

<sup>39</sup> “How Google uses information from sites or apps that use our services” per Google Privacy & Terms at <https://policies.google.com/technologies/partner-sites?hl=en-US> (accessed February 10, 2023).

<sup>40</sup> “How Google uses information from sites or apps that use our services” per Google Privacy & Terms at <https://policies.google.com/technologies/partner-sites?hl=en-US> (accessed February 10, 2023). See also “About the Cross Device reports” per Analytics Help at <https://support.google.com/analytics/answer/3234673?hl=en> (accessed February 10, 2023).

<sup>41</sup> “About conversion tracking” per Google Ads Help at <https://support.google.com/google-ads/answer/1722022?hl=en> (accessed February 10, 2023); “Use pay for conversions in Display campaigns” per Google Ads Help at <https://support.google.com/google-ads/answer/7528254?hl=en> (accessed February 10, 2023).

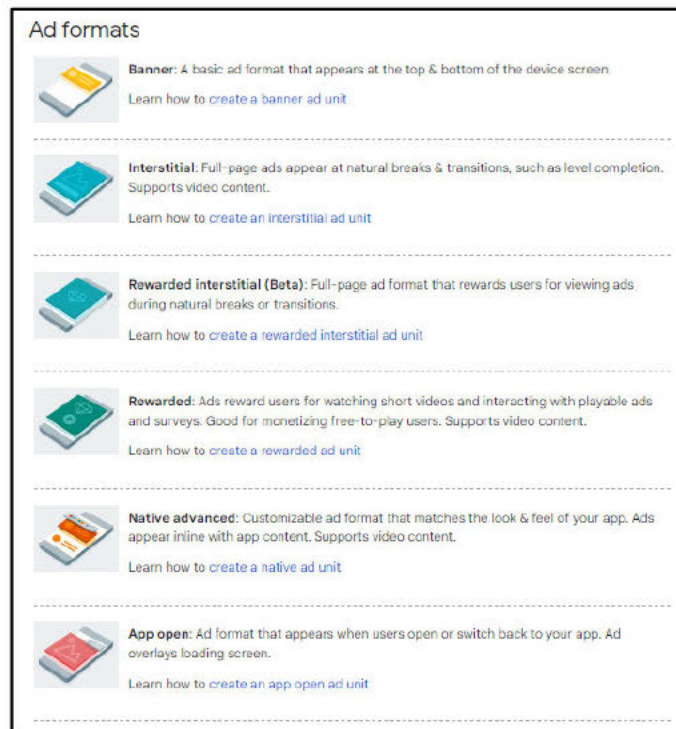


valuable, these customer actions are called conversions.”<sup>42</sup> Advertisers can choose to finance their campaigns based on conversions, paying Google “when customers convert on [the advertiser’s] website or app.”<sup>43</sup> Advertisers can also choose to create ad campaigns that Google optimizes towards generating a selected conversion action.<sup>44</sup>

## 6.2. AdMob

24. Google describes AdMob as “a mobile ad network and monetization platform for mobile developers who want to earn money from ads, gain actionable insights, and grow their app business.”<sup>45</sup> According to Google, “AdMob makes it easy for developers to earn money from their mobile apps with high-quality ads,” as AdMob connects the advertisers who create and pay for advertisements with the mobile apps that can show those advertisements to relevant users.<sup>46</sup> AdMob offers advertisements on mobile applications in various formats:

**Figure 2**  
**AdMob Ad Formats**<sup>47</sup>



<sup>42</sup> “About conversion tracking” per Google Ads Help at <https://support.google.com/google-ads/answer/1722022?hl=en> (accessed February 10, 2023).

<sup>43</sup> “Use pay for conversions in Display campaigns” per Google Ads Help at <https://support.google.com/google-ads/answer/7528254?hl=en> (accessed February 10, 2023).

<sup>44</sup> “About campaign-specific conversion goals,” per Google Ads Help at <https://support.google.com/google-ads/answer/9143218?hl=en> (accessed February 19, 2023).

<sup>45</sup> “Compare Ad Manager, AdSense, and AdMob” per Google Ad Manager Help at <https://support.google.com/admanager/answer/9234653?hl=en> (accessed February 10, 2023).

<sup>46</sup> “What is AdMob” per Google AdMob at <https://admob.google.com/home/resources/what-is-admob/> (accessed February 10, 2023).

<sup>47</sup> “Ad units, ad formats, & ad types” per Google AdMob Help at <https://support.google.com/admob/answer/6128738?hl=en> (accessed February 10, 2023).

25. AdMob uses an ad auction to automatically select and serve high-performing advertisements to apps.<sup>48</sup> I understand that the selected advertisements may be targeted using inferences made about users' interests based on websites they visit, apps they use, and other previously collected or historical data.<sup>49</sup> These targeted ads consider user data including "previous search queries, activity, visits to sites or apps, demographic information, or location" and may include, for example, "demographic targeting, interest category targeting, remarketing" and various other targeting methods.<sup>50</sup>
26. I understand that AdMob, including AdMob+, leverages the Google Mobile Ads Software Development Kit ("GMA SDK") in its provision of advertisements,<sup>51</sup> and Google represents that "[i]ntegrating the Google Mobile Ads SDK into an app is the first step toward displaying ads and earning revenue" with AdMob.<sup>52</sup>
27. I also understand that, through an effort that Google internally called "AdMob+," Google included features from Google Analytics starting in the summer of 2019.<sup>53</sup> According to documents that Google produced in this litigation, "AdMob+ is an initiative to ensure we are collecting analytics data for all AdMob publishers."<sup>54</sup>
28. As of the date of this report, Google has produced its representation of global AdMob income statements for the period 2018 through 2021.<sup>55</sup> As indicated therein, Google represents that its global AdMob gross revenues [REDACTED] from approximately [REDACTED] in 2018 to approximately [REDACTED] in 2021.<sup>56</sup>

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<sup>48</sup> "How AdMob works" per Google AdMob Help at [https://support.google.com/admob/answer/7356092?visit\\_id=638107965052971945-1412475492&hl=en&ref\\_topic=7579128&rd=1](https://support.google.com/admob/answer/7356092?visit_id=638107965052971945-1412475492&hl=en&ref_topic=7579128&rd=1) (accessed February 20, 2023).

<sup>49</sup> "AdMob & AdSense program policies" per Google AdMob Help at <https://support.google.com/admob/answer/7676680> (accessed February 18, 2023).

<sup>50</sup> "AdMob & AdSense program policies" per Google AdMob Help at <https://support.google.com/admob/answer/7676680> (accessed February 18, 2023).

<sup>51</sup> See, for example, Fourth Amended Complaint, January 4, 2023, pp. 17-18; "Mobile Ads SDK (Android)" per Google AdMob at <https://developers.google.com/admob/android/quick-start> (accessed February 10, 2023) and "Mobile Ads SDK (iOS)" per Google AdMob at <https://developers.google.com/admob/ios/quick-start> (accessed February 10, 2023).

<sup>52</sup> See, for example, "Mobile Ads SDK (Android)" per Google AdMob at <https://developers.google.com/admob/android/quick-start> (accessed February 10, 2023) and "Mobile Ads SDK (iOS)" per Google AdMob at <https://developers.google.com/admob/ios/quick-start> (accessed February 10, 2023); See also Defendant Google LLC's Objections and Supplemental Responses to Plaintiffs' Interrogatories, Set Seven, Supplemental Response to Interrogatory No. 23, pp. 17-18. The Interrogatory Response states that data is still collected by the GMA SDK when a user is logged into their Google Account and has WAA and/or sWAA turned off.

<sup>53</sup> Fourth Amended Complaint, January 4, 2023, pp. 17-18.

<sup>54</sup> GOOG-RDGZ-00058360-392 at 361.

<sup>55</sup> GOOG-RDGZ-00187666; GOOG-RDGZ-00187665.

<sup>56</sup> GOOG-RDGZ-00187666; GOOG-RDGZ-00187665.

### 6.3. Ad Manager

29. Google describes Ad Manager<sup>57</sup> as an “ad management platform for large publishers” that “provides granular controls and supports multiple ad exchanges and networks, including AdSense, Ad Exchange, third-party networks, and third-party exchanges.”<sup>58</sup> According to Google, Ad Manager provides publishers with a central place to monetize all of their advertising spaces, including websites, mobile apps, videos, and games.<sup>59</sup>
30. Google explains that a web page or app using Ad Manager “needs to be able to request ads from Ad Manager to display them.”<sup>60</sup> With respect to mobile apps, Google represents that the Google Mobile Ads SDK “allows [publishers] to call ads from Ad Manager on [their] apps.”<sup>61</sup> Google also represents that in the context of Ad Manager and apps, the GMA SDK “collects information such as device information” which “helps app developers gain insights about their users and maximize ad revenue.”<sup>62</sup>
31. As of the date of this report, Google has not produced income statements for Ad Manager or the portion of Ad Manager that Google attributes to mobile apps. As indicated on Schedule 5.3, however, the available information indicates that the annual gross revenues associated with the apps portion of Ad Manager are approximately [REDACTED] associated with AdMob.<sup>63</sup>

### 6.4. App Promo

32. App Promo – Google’s internal moniker for the advertising campaign type that Google publicly labels “App campaigns”<sup>64</sup> – is a type of Google Ads campaign focused on the promotion of third-party apps.<sup>65</sup> App Promo allows app developers to promote their apps across Google’s largest properties including Google Search, Google Play, YouTube, AdMob, and millions of apps and websites across the Google Display Network.<sup>66</sup> App developers running an App Promo campaign

<sup>57</sup> I understand that “DRX,” “DFP,” and “AdX” are names of former Google advertising offerings which have been combined within Ad Manager. See GOOG-RDGZ-00083725-748 at 730 and “Introducing Google Ad Manager” per Google Ad Manager at <https://blog.google/products/admanager/introducing-google-ad-manager/> (accessed February 10, 2023).

<sup>58</sup> “Advertising with Google Ad Manager” per Google Ad Manager Help at <https://support.google.com/admanager/answer/6022000?hl=en> (accessed February 10, 2023).

<sup>59</sup> “Advertising with Google Ad Manager” per Google Ad Manager Help at <https://support.google.com/admanager/answer/6022000?hl=en> (accessed February 10, 2023).

<sup>60</sup> “Key Concepts” per Google Ad Manager Help at [https://support.google.com/admanager/answer/6021064?hl=en&ref\\_topic=7505788](https://support.google.com/admanager/answer/6021064?hl=en&ref_topic=7505788) (accessed February 10, 2023).

<sup>61</sup> “Key Concepts” per Google Ad Manager Help at [https://support.google.com/admanager/answer/6021064?hl=en&ref\\_topic=7505788](https://support.google.com/admanager/answer/6021064?hl=en&ref_topic=7505788) (accessed February 10, 2023).

<sup>62</sup> “Mobile Ads SDK” per Google Ad Manager at <https://developers.google.com/ad-manager/mobile-ads-sdk> (accessed February 10, 2023).

<sup>63</sup> Schedule 5.3.

<sup>64</sup> Deposition of Belinda Langner, December 15, 2022, pp. 276-277.

<sup>65</sup> “About App campaigns” per Google Ads Help at <https://support.google.com/google-ads/answer/6247380?hl=en> (accessed February 10, 2023).

<sup>66</sup> “About App campaigns” per Google Ads Help at <https://support.google.com/google-ads/answer/6247380?hl=en> (accessed February 10, 2023); GOOG-RDGZ-00182621-635 at 635.

can choose from three campaign subtypes that focus on increasing app installs, re-engaging customers, or building excitement and awareness before an app's release.<sup>67</sup>

33. As of the date of this report, Google has produced its representation of U.S. App Promo income statements for the period 2017 through 2021.<sup>68</sup> As indicated therein, Google represents that its U.S. App Promo gross revenues [REDACTED] from approximately \$ [REDACTED] in 2017 to approximately [REDACTED] in 2021.<sup>69</sup>

## 6.5. Google Analytics for Firebase

34. Google Analytics for Firebase ("GA4F") is a set of tools offered by Google that allows app developers to measure, track, and analyze user behavior in mobile apps by providing "comprehensive in-app behavioral and marketing analytics."<sup>70</sup> As indicated in the name and as discussed below, I understand that GA4F is a component of Firebase's suite of products, and that Firebase is Google's mobile application software development kit.<sup>71</sup>
35. Google Analytics is an analytics platform that allows Google to collect data about users' activity on websites and mobile applications, aggregate and organize that data, and provide insight into consumer use of the application or website.<sup>72</sup> With respect to mobile apps, I understand that Google Analytics for Firebase and its next generation Google Analytics 4 ("GA4")<sup>73</sup> are app measurement solutions that offer app analytics, event reporting, and data export to provide insight on app usage and user engagement.<sup>74</sup>
36. Firebase is an app development platform that provides integrated tools to help developers build, grow, and monetize their apps, and the Firebase Software Development Kit ("SDK") enables

<sup>67</sup> "About App campaigns" per Google Ads Help at <https://support.google.com/google-ads/answer/6247380?hl=en> (accessed February 10, 2023).

<sup>68</sup> GOOG-RDGZ-00184247; GOOG-RDGZ-00185744. While these App Promo income statements are not labeled as being specific to the U.S. (as compared to global), other information produced by Google in this matter supports my conclusion that these are U.S. income statements. For example, in a November 2019 internal presentation entitled "Google Ads & Analytics: Internal Training for Firebase," Google represented global annualized App Promo revenues of approximately \$ [REDACTED] as of July 2019, and that approximately [REDACTED] of these global revenues – approximately \$ [REDACTED] – was attributable to the "Americas." See GOOG-RDGZ-00067396-438 at 403. The App Promo income statements that I assume are specific to the U.S. indicate 2019 revenues of approximately [REDACTED]. See GOOG-RDGZ-00184247.

<sup>69</sup> GOOG-RDGZ-00184247; GOOG-RDGZ-00185744.

<sup>70</sup> "What is Google Analytics for Firebase?" per Firebase Help at <https://support.google.com/firebase/answer/7388022?hl=en> (accessed February 10, 2023). See also "Google Analytics" per Firebase at <https://firebase.google.com/docs/analytics> (accessed February 10, 2023).

<sup>71</sup> "Google Analytics" per Firebase at <https://firebase.google.com/docs/analytics> (accessed February 10, 2023). See also "Firebase SDK" per Google Open Source at <https://opensource.google/projects/firebase-sdk> (accessed February 10, 2023).

<sup>72</sup> "How Google Analytics works" per Analytics Help at <https://support.google.com/analytics/answer/12159447?hl=en> (accessed February 10, 2023).

<sup>73</sup> "[GA4] Introducing the next generation of Analytics, Google Analytics 4" per Analytics Help at <https://support.google.com/analytics/answer/10089681?hl=en> (accessed February 19, 2023).

<sup>74</sup> See, for example, "Google Analytics" per Firebase at <https://firebase.google.com/docs/analytics> (accessed February 10, 2023); GOOG-RDGZ-00053252-277 at 256.



access to Firebase services.<sup>75</sup> According to documents that Google produced in this litigation, Firebase is [REDACTED] and [REDACTED] [REDACTED] because many of Google's key businesses are [REDACTED]:

[REDACTED]

37. According to Google, Google Analytics is “at the heart” of Firebase,<sup>77</sup> and Google requires third-party developers to use the Firebase SDK in order to link their apps to Google Analytics data streams.<sup>78</sup> According to documents produced by Google, the integration of Firebase, Google Analytics, and AdMob creates a unique offering in the advertising market.<sup>79</sup> Google described the data implications of the combined product offering in a 2018 internal document entitled “AdMob + Firebase Integration”:

*AdMob will now have access to Google Analytics for Firebase contextual signals (e.g., session duration, in-app purchasing, etc.) and Google Analytics for Firebase will now have access to AdMob's click-level revenue data. No other ads/analytics platform in the world has access to this type of data, and we think that this creates a differentiated offering as well as powerful use cases for our publishers.*<sup>80</sup>

38. Google also notes that “the commercialization of Google Analytics for Firebase and its SDK to [app promo advertisers] affords [Google] strategic opportunities to drive incremental value to [Google's] Apps business.”<sup>81</sup> Google indicates the following benefits associated with increased integration and commercialization of GA4F by mobile application developers:

- *Developers receive value for measuring structured event data (e.g., first class reporting, insights, etc.)*
- *Optionally, this data then becomes usable across Google's products/services – allowing developers enhanced functionality and actionability (e.g., audience targeting and demographic reports)*

<sup>75</sup> See, for example, “Firebase SDK” per Google Open Source at <https://opensource.google/projects/firebase-sdk> (accessed February 10, 2023); “What is Google Analytics for Firebase?” per Firebase Help at <https://support.google.com/firebase/answer/7388022?hl=en> (accessed February 10, 2023); “Learn the fundamentals” per Firebase at <https://firebase.google.com/docs> (accessed February 10, 2023).

<sup>76</sup> GOOG-RDGZ-00077957-961 at 957. Emphasis added.

<sup>77</sup> “Google Analytics” per Firebase at <https://firebase.google.com/docs/analytics> (accessed February 10, 2023).

<sup>78</sup> Per discussions with Mr. Hochman, I understand that he is not aware of any indication from Google that third-party developers could link their apps to Google Analytics by any other means. See also “Get Started with Google Analytics” per Firebase at <https://firebase.google.com/docs/analytics/get-started?technology=android&platform=ios> (accessed February 10, 2023); GOOG-RDGZ-00141077-337 at 189.

<sup>79</sup> GOOG-RDGZ-00182863-877 at 863.

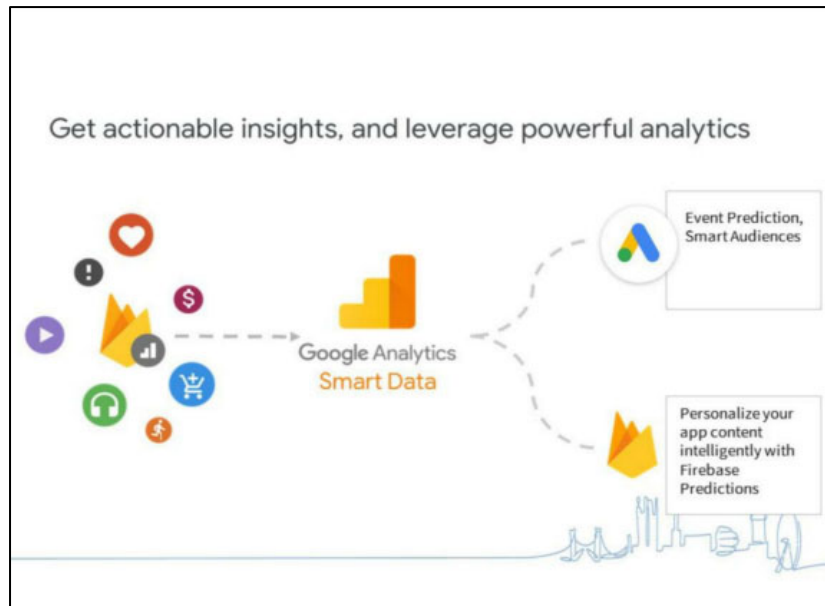
<sup>80</sup> GOOG-RDGZ-00182863-877 at 863.

<sup>81</sup> GOOG-RDGZ-00030019-023 at 019.

- *As a result, developers are able to provide more engaging app experiences – increasing their end-users’ satisfaction and building better businesses in the process*
- *Developers, in turn, come to see Google as a partner, returning to Google for additional solutions and for the opportunities it creates to reach new users*
- *And the cycle repeats; end-users are delighted by the app experience.*<sup>82</sup>

39. Google has also represented that data from GA4F can be used to “understand campaign performance, unlocking optimizations to find more engaged and valuable customers for your app via [App Promo].”<sup>83</sup> An October 2019 presentation entitled “App Campaigns with Google: App advertising, and our future plans” included the below graphic showing some ways in which Google leverages Google Analytics data (including GA4F data) for App Promo:

**Figure 3**  
**Google Analytics and Personalized App Content**<sup>84</sup>



40. Google Analytics can also be leveraged by customers of other Google advertising offerings, such as Ad Manager.<sup>85</sup> Google’s internal documents also reflect that Ad Manager can be integrated with Google Analytics for Firebase.<sup>86</sup> Google represents that Ad Manager publishers can “make smarter decisions” by connecting their data with integrated tools including Google Analytics.<sup>87</sup>

<sup>82</sup> GOOG-RDGZ-00030019-023 at 020.

<sup>83</sup> “Google Analytics for Firebase” per Firebase at <https://firebase.google.com/products/analytics> (accessed February 10, 2023).

<sup>84</sup> GOOG-RDGZ-00198470-643 at 515 and 529.

<sup>85</sup> “Data & Insights” per Google Ad Manager at <https://admanager.google.com/home/capabilities/data-insights/> (accessed February 10, 2023).

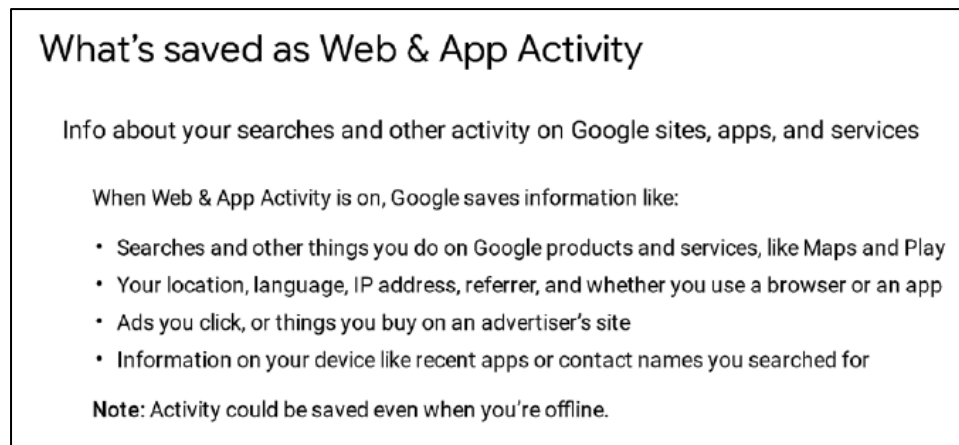
<sup>86</sup> GOOG-RDGZ-00142970-977 at 970.

<sup>87</sup> “Data & Insights” per Google Ad Manager at <https://admanager.google.com/home/capabilities/data-insights/> (accessed February 10, 2023).

## 6.6. Web & App Activity (WAA) and Supplemental Web & App Activity (sWAA)

41. Web & App Activity (“WAA”) is a Google setting (or “activity control”) related to Google’s collection and saving of a user’s “activity on Google sites and apps, including associated information like location, to give users faster searches, better recommendations, and more personalized experiences in Maps, Search, and other Google services.”<sup>88</sup> As indicated in the image below from an online Google Help Center, the information controlled by WAA includes the user’s searches, activity on Google products such as Maps and Google Play, the user’s location, language, IP address, ads clicked, items purchased, and information about the user’s device, even when the user is offline:

**Figure 4**  
**What’s Saved as Web & App Activity**<sup>89</sup>



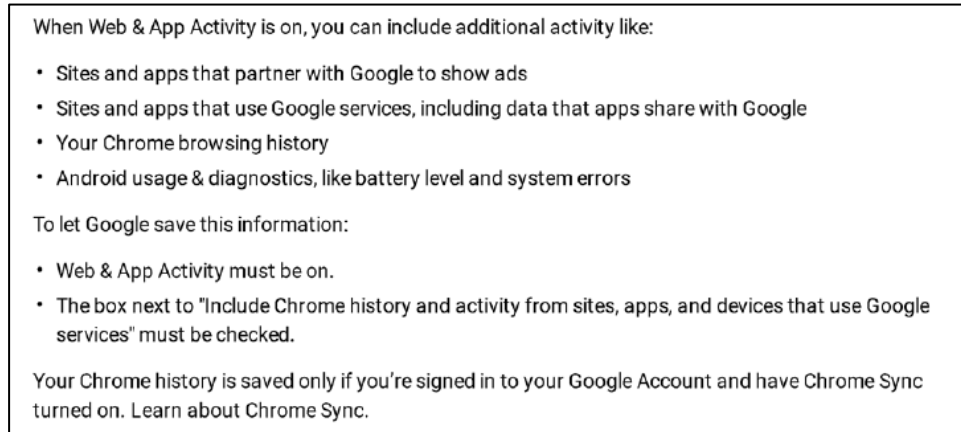
42. Supplemental Web & App Activity (“sWAA”) refers to a WAA subsetting related to Google’s collection and saving of a user’s “Chrome history and activity from sites, apps, and devices that use Google services.”<sup>90</sup> I understand that when WAA is set to “off,” the sWAA subsetting is turned “off” by default, but when WAA is set to “on,” sWAA can be set to either “on” or “off.” As indicated in the image below from the same online Google Help Center, the information controlled by sWAA includes data regarding the user’s activity on sites and apps that partner with Google, data regarding activity on sites and apps that use Google services, and data regarding Android device usage and diagnostics including battery levels and system errors:

<sup>88</sup> “Activity Controls” per Google Account at <https://myactivity.google.com/activitycontrols> (accessed February 10, 2023).

<sup>89</sup> GOOG-RDGZ-00000921; “Find & control your Web & App Activity” at Google Account Help per [https://support.google.com/accounts/answer/54068?hl=en&ref\\_topic=3382296](https://support.google.com/accounts/answer/54068?hl=en&ref_topic=3382296) (accessed February 10, 2023).

<sup>90</sup> “Activity Controls” per Google Account at <https://myactivity.google.com/activitycontrols> (accessed February 10, 2023).

**Figure 5**  
**Supplemental Web & App Activity<sup>91</sup>**



43. Google Product Manager David Monsees described the difference between WAA and sWAA as follows:

*Broadly, WAA covers things you do with a Google product (e.g., search, maps, assistant, play store, etc.) and sWAA covers things you do on Google platforms where you may not know that data is being sent to Google (e.g., chrome, android, 3P apps, display ads, etc.).*<sup>92</sup>

44. I understand that Google represents that it does not use data from GA4F to personalize ads when WAA or sWAA is set to “off,” but Google continues to use that data for tracking conversions, regardless of WAA/sWAA settings.<sup>93</sup> From my discussions with Mr. Hochman, I understand that the data that Google collects and saves from users’ app activity is nonetheless comprehensive, regardless of the user’s WAA and sWAA settings.<sup>94</sup> More specifically, I understand that the app activity data collected from WAA/sWAA-Off users is effectively the same app activity data collected from WAA/sWAA-On users.<sup>95</sup>
45. I understand that, in July 2016, Google modified the default settings for newly created Google accounts such that WAA and sWAA were enabled (*i.e.*, WAA-On and sWAA-On) by default.<sup>96</sup> After this date, new Google account holders were automatically WAA/sWAA-On unless those account holders checked and proactively disabled one or both settings.<sup>97</sup> At about the same time in June 2016, Google initiated a “consent bump” program through which Google notified existing account holders upon sign-in to their Google account that they could elect to enable these settings and realize benefits such as “better Google products, fewer irrelevant ads.”<sup>98</sup>

<sup>91</sup> GOOG-RDGZ-00000921.

<sup>92</sup> GOOG-RDGZ-00015211 – 219 at 217.

<sup>93</sup> Discussions with Mr. Hochman. See also, for example, Deposition of Belinda Langner, December 15, 2022, pp. 89, 145, 185, and 217.

<sup>94</sup> Discussions with Mr. Hochman.

<sup>95</sup> Discussions with Mr. Hochman. See also, for example, Google Response to RFA No. 1.

<sup>96</sup> See, for example, GOOG-RDGZ-00020690-691 at 690.

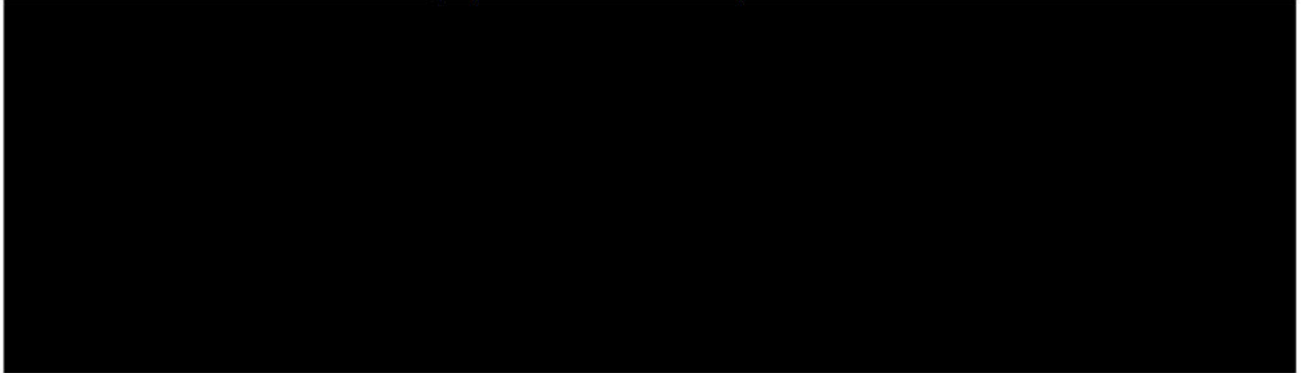
<sup>97</sup> See, for example, GOOG-RDGZ-00023187-190 at 188.

<sup>98</sup> See, for example, GOOG-RDGZ-00018661-675 at 668, 672.



46. As of the date of this report, Google has produced a document that represents the number of Google accounts that were “Created,” “Active,” and “Created or Active” with WAA and sWAA enabled in the U.S. for each month during the period May 2016 through October 2022.<sup>99</sup> As detailed in Schedules 13.1 and 13.2 and summarized in the figure below, this data indicates that the percentage of Google’s U.S. active accounts with sWAA-off (including accounts for which WAA is set to “off” and therefore sWAA is turned “off” by default) [REDACTED]

**Figure 6**  
**U.S. Active Google Accounts with sWAA Off:**  
**July 1, 2016 – December 31, 2022<sup>100</sup>**



47. I am not aware of any representation from Google regarding its generation of the account data underlying the figure above or any limitations that Google may have applied in defining “WAA Enabled” and “sWAA Enabled” accounts (*e.g.*, if the settings were enabled throughout a given month, at any time during that month, etc.). In the absence of this information, I searched for other evidence regarding the frequency of changes to WAA and sWAA settings or the extent to which Google personnel consider the WAA and sWAA settings to be temporary or permanent. Based on my review of the available evidence and as indicated below, it appears that Google personnel generally characterize WAA settings as “a permanent opt-out/opt-in control” that is rarely changed. For example:

- In an internal Google document updated in August 2018 and entitled “[REDACTED],” [REDACTED]

<sup>99</sup> GOOG-RDGZ-00204475, tab “Sheet1.” This document indicates that the data excludes “dashers” (*i.e.*, enterprise account holders), “Googlers” (*i.e.*, Google personnel), and “supervised” accounts. I also understand that “Active Accounts” refers to accounts that were active in the 28-day period before the month start date of a given measurement period. Deposition of Christopher Ruemmler, September 9, 2022, p. 181. While the Google file produced as GOOG-RDGZ-00204475 is not designated as U.S. or global, other information produced by Google in this matter supports my conclusion that this file pertains to U.S. accounts. For example, a separate Google file (GOOG-RDGZ-00187010 at tab “sWAA”) represents that approximately [REDACTED] U.S. accounts were “active at any time between July 27, 2016 and July 27, 2020,” whereas the file produced as GOOG-RDGZ-00204475 represents that approximately [REDACTED] accounts were “Created or Active” as of June 1, 2020.

<sup>100</sup> Schedule 13.1. While Google has produced similar account data for May and June 2016, I excluded those months from this summary for consistency with an assumed damages period beginning July 1, 2016. In the absence of Google account data for November and December 2022, I hold constant the October 2022 account data for November and December 2022. In my opinion, this assumption is [REDACTED] in light of the fact that the number of active accounts with sWAA off continued to [REDACTED] on a month-over-month basis through October 2022.

Google personnel indicated that [REDACTED] of Google 28DA accounts [REDACTED]

”<sup>101</sup>

- In a January 31, 2020 email from Uwe Bubeck to other Google employees, Mr. Bubeck noted that *“the fact that WAA is a pause control may be relevant from a theoretical/philosophical perspective, but most users probably use it as a permanent opt-out/opt-in control, instead of toggling.”*<sup>102</sup> Ms. Jia Liu responded that this was *“True for WAA.”*<sup>103</sup> Ms. Liu went on to indicate that [REDACTED]

”<sup>104</sup> Later in the same email chain, Mr.

Bob Cui noted that, by his analysis of [REDACTED]

”<sup>105</sup>

48. Google has also produced a separate file that includes the following data regarding U.S. Google accounts during the four-year period between July 27, 2016 and July 27, 2020:

**Figure 7**  
**Data Regarding U.S. Google Accounts Active at Any Time Between**  
**July 27, 2016 and July 27, 2020**<sup>106</sup>



49. While Google has not produced similar data for the complete Class Period to date, even the above truncated records indicate that, among approximately [REDACTED] U.S. Google accounts that were ever active during this period, approximately [REDACTED] (*i.e.*, approximately [REDACTED]%) had sWAA turned off at some point.<sup>107</sup>

<sup>101</sup> GOOG-RDGZ-00209874-876 at 875.

<sup>102</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>103</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>104</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>105</sup> GOOG-RDGZ-00042152.R-159.R at 152.R. See also, for example, GOOG-RDGZ-00014982-986 at 984.

<sup>106</sup> GOOG-RDGZ-00187010 at tab “SWAA”. Emphasis added.

<sup>107</sup> GOOG-RDGZ-00187010 at tab “SWAA”. See also, Defendant Google LLC’s Supplemental Objections and Responses to Plaintiffs’ Interrogatories, Set Six (Nos. 12, 16, &17), Supplemental Response to Interrogatory No. 12, p. 6.

**6.7. Google's Contemporaneous Analyses of the Financial Impact of Certain Settings and Privacy Controls**

50. Based on my review and analysis of the available record, I am aware of several indications that Google employees discussed or otherwise expressed interest in analyzing the financial impact to Google of users changing their WAA/sWAA settings.
51. For example, as illustrated in the presentation slide below summarizing Google's separate analyses of the financial impact to Google of [REDACTED], an internal Google comment asks "[REDACTED]":

**Figure 8**

Questions<sup>108</sup>

52. Relatedly, in a late-March 2020 email to other Google personnel, Connie Choi, a Google Product Analyst within Ads Security,<sup>109</sup> reiterated an intent to "move [REDACTED]".<sup>110</sup> When Google employee JK Kearns responded to clarify Ms. Choi's proposed experiment, Ms. Choi offered the example of [REDACTED] and her team's hypothesis of first- and second-order impacts:

<sup>108</sup> GOOG-RDGZ-00188655. Emphasis in original. I discuss the Google analysis underlying this presentation slide in Section 6.7.1.1 below.

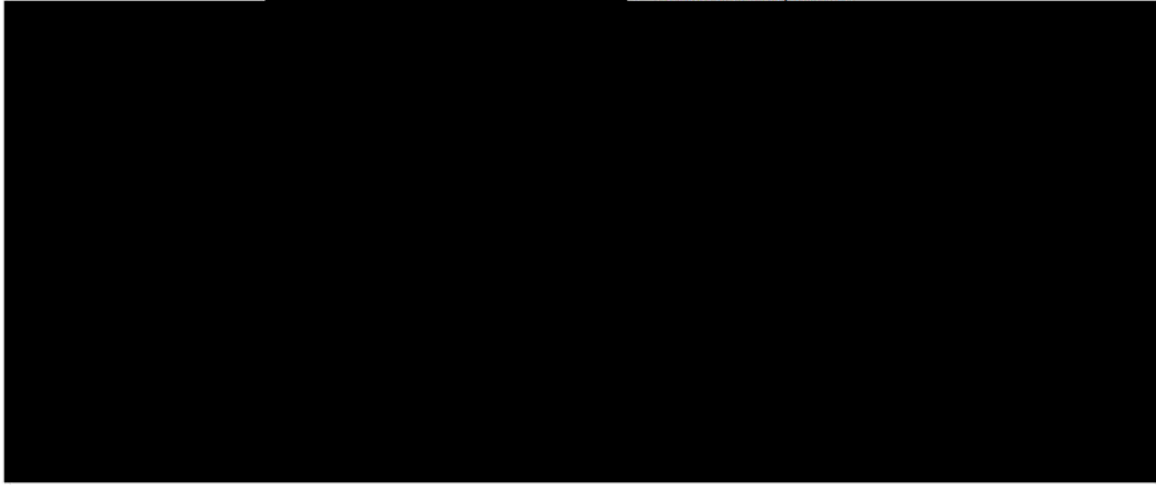
<sup>109</sup> GOOG-RDGZ-00117988-992 at 991.

<sup>110</sup> GOOG-RDGZ-00117988-992 at 990.



**Figure 9**

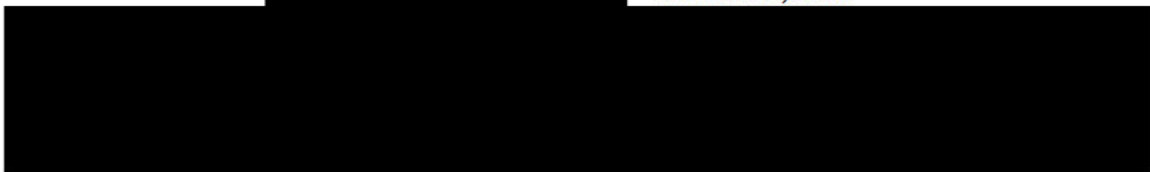
– March 25, 2020<sup>111</sup>



53. David Monsees, a Product Manager within Footprints,<sup>112</sup> responded to Ms. Choi's message noting  
[REDACTED].<sup>113</sup>

**Figure 10**

– March 25, 2020<sup>114</sup>



54. On April 3, 2020, Mr. Monsees sent another email to Ms. Choi, Mr. Kearns and others  
[REDACTED]  
[REDACTED] Mr. Monsees indicated the goal of any such experiment would be to  
[REDACTED]

**Figure 11**

– April 3, 2020<sup>115</sup>



<sup>111</sup> GOOG-RDGZ-00117988-992 at 990.

<sup>112</sup> Deposition of David Monsees, September 15, 2022, pp. 23-24.

<sup>113</sup> GOOG-RDGZ-00117988-992 at 990.

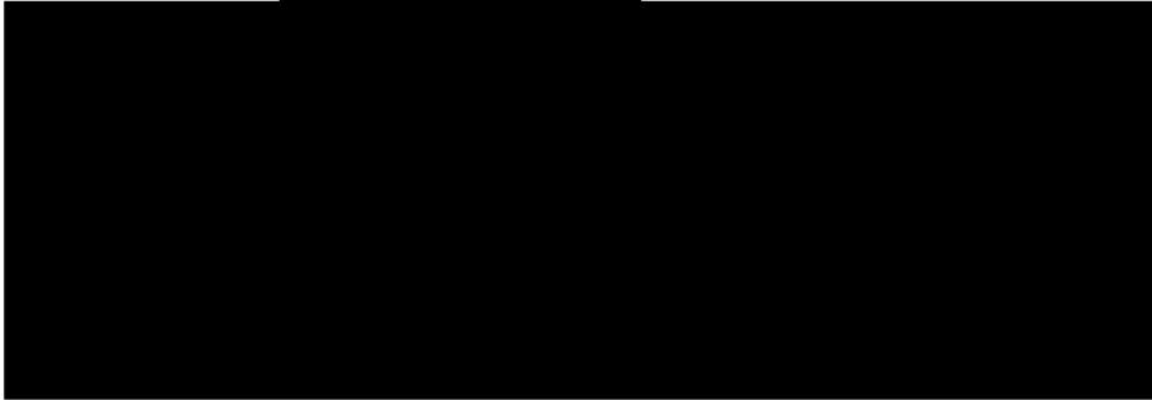
<sup>114</sup> GOOG-RDGZ-00117988-992 at 990.

<sup>115</sup> GOOG-RDGZ-00147545-546 at 545.

55. On April 8, 2020 Mr. Vlad Adzic responded to a subset of the addressees on Mr. Monsees' April 3, 2020 email expressing support for a "[REDACTED]" to measure the "[REDACTED]":

**Figure 12**

– April 8, 2020<sup>116</sup>



56. Notwithstanding the above discussion of and interest in analyzing the financial impact to Google of users changing their WAA/sWAA settings, I am not aware of documentary evidence that such an experiment was performed by Google personnel.
57. In light of the apparent absence of that evidence, I searched for and analyzed other indications of Google personnel assessing the financial impact to Google of changes in other settings and controls, including Google's analyses of the financial impact of [REDACTED] under Google's [REDACTED] program and the financial impact of the default blocking of third-party cookies within Google's "Incognito" Mode. I identify and describe these indicators below.

#### **6.7.1. Analyses of the Narnia 3 Program**

58. In a June 3, 2020 internal presentation entitled "Privacy for personalized experiences workshop," Google described the [REDACTED] Program as "[REDACTED]".<sup>117</sup> A separate internal presentation from early 2020 entitled "Consent Value Prop Research Overview: [REDACTED]" indicated that [REDACTED] was intended to provide "[REDACTED]".

<sup>116</sup> GOOG-RDGZ-00117988-992 at 988.

<sup>117</sup> GOOG-RDGZ-00151720-971 at 907.

<sup>118</sup> See, for example, <https://gdpr.eu/what-is-gdpr/> (accessed February 10, 2023).

<sup>119</sup> See, for example, <https://oag.ca.gov/privacy/ccpa> (accessed February 10, 2023).

### Figure 13

## Google Internal Presentation – Consent Value Prop Research Overview:



59. As part of the [REDACTED] Program, Google personnel [REDACTED]  
[REDACTED].<sup>121</sup> I am currently aware of two such [REDACTED]  
[REDACTED]. I understand from Mr. Hochman and  
my review of documents produced in this matter that [REDACTED]  
[REDACTED]  
[REDACTED] I describe these financial impact analyses below.

### 6.7.1.1.

60. In an internal file entitled “Na [REDACTED] Google analyzed the [REDACTED] [REDACTED] 123 As [REDACTED] detailed therein. [REDACTED]

<sup>120</sup> GOOG-RDGZ-00203024-038 at 025.

<sup>121</sup> GOOG-RDGZ-00117988-992 at 990.

<sup>122</sup> Discussions with Mr. Hochman. See also, for example, GOOG-RDGZ-00090149-164 at 154. I understand that when a user “consents” to GAP, that user has the GAP setting turned on and has therefore “consented” to ads personalization.

123 GOOG-RDGZ-00188768.

<sup>124</sup> GOOG-RDGZ-00188768 at tab “Matrix.”

<sup>125</sup> See, for example, GOOG-RDGZ-00188768 at tab “Summary.”

<sup>126</sup> See, for example, GOOG-RDGZ-00188768 at tab “Summary.”

61. As previously discussed, the results of the [REDACTED] specific to [REDACTED] [REDACTED] were included in a presentation slide entitled “ [REDACTED] ”. <sup>127</sup>  
As illustrated below, the [REDACTED]

**Figure 14**

<sup>128</sup>



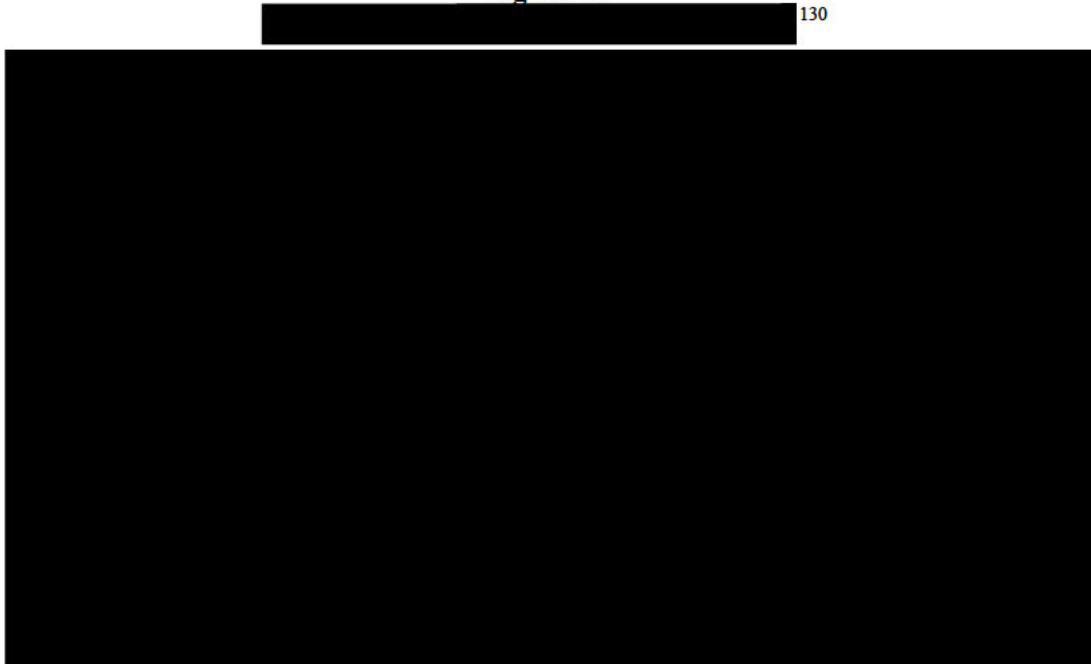
62. Results from the [REDACTED] were also included in a March 18, 2020 presentation entitled “Na [REDACTED]” <sup>129</sup> The presentation noted that [REDACTED]

<sup>127</sup> GOOG-RDGZ-00188655.

<sup>128</sup> GOOG-RDGZ-00188655. See also GOOG-RDGZ-00188768 at tab “Matrix.”

<sup>129</sup> GOOG-RDGZ-00208084-097 at 093-094.

Figure 15



63. As indicated in the figure above, [REDACTED] 130  
[REDACTED] As discussed in  
Sections 7 and 8, this segmentation is relevant to my [REDACTED]  
[REDACTED] To this end, the  
[REDACTED] indicates that approximately [REDACTED] 131

64. The [REDACTED]  
[REDACTED] 132 As discussed in Section 7 below, this segmentation is relevant to the  
determination of Google's unjust enrichment in this matter, as [REDACTED]  
[REDACTED]

6.7.1.2. [REDACTED]

65. In a December 2019 model titled "Nat [REDACTED]  
[REDACTED]  
[REDACTED]

<sup>130</sup> GOOG-RDGZ-00208084-097 at 094. See also GOOG-RDGZ-00188768 at tab "Matrix."

<sup>131</sup> Schedule 15.1. While this [REDACTED] I was specific to Europe, I am not aware of any reason and have not observed any evidence to indicate that this ratio would materially differ for the U.S.

<sup>132</sup> GOOG-RDGZ-00188768 at tabs "Summary" and "Matrix."

<sup>133</sup> GOOG-RDGZ-00205831.



- 134
66. The [REDACTED] 137
67. The results of the [REDACTED] were included in a January 13, 2020 presentation entitled [REDACTED] 138  
As illustrated below, the presentation noted that [REDACTED]

**Figure 16**



#### **6.7.2. Ads Impact and Response from “ChromeGuard” and “SameSite & Secure” Launches**

68. In a May 2020 Google document entitled “Ads Impact and Response from ‘ChromeGuard’ and ‘SameSite & Secure’ Launches” (the “ChromeGuard study”), a cross section of Google personnel

<sup>134</sup> GOOG-RDGZ-00205831.

<sup>135</sup> See, for example, GOOG-RDGZ-00205831 at tab “Sensitivity Analysis (Net).”

<sup>136</sup> GOOG-RDGZ-00205831. See, for example, tabs “Sensitivity Analysis (Net)” and “Search.” I note that the annualized revenues are calculated from source data covering inconsistent and limited time periods. See, for example, GOOG-RDGZ-00205831 at tabs “YT-total” and “Search.”

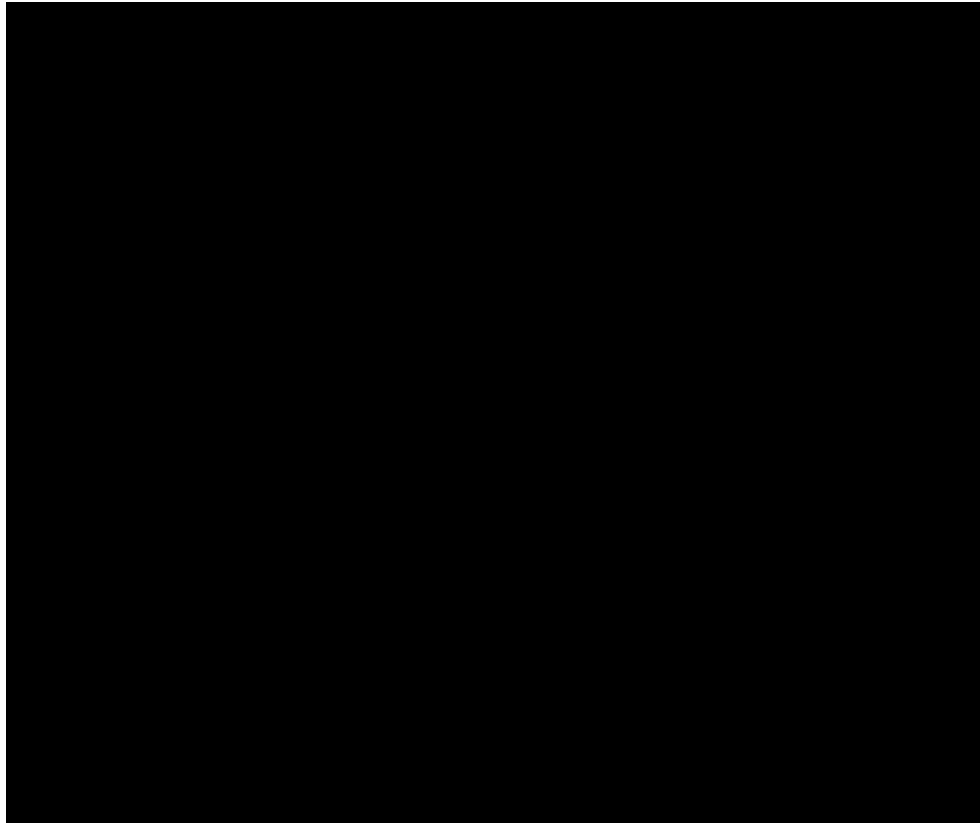
<sup>137</sup> GOOG-RDGZ-00205831 at tabs “Sensitivity Analysis (Gross)” and “Sensitivity Analysis (Net).”

<sup>138</sup> GOOG-RDGZ-00208058-083 at 062. See also GOOG-RDGZ-00205831 at tab “Summary for deck.”

<sup>139</sup> GOOG-RDGZ-00208058-083 at 062. See also GOOG-RDGZ-00205831 at tab “Summary for deck.”

summarized the results of internal analyses regarding the “anticipated impact to Search Ads, YouTube Ads, and Display Ads” from the then-pending release of “ChromeGuard,” Google’s internal moniker for the default blocking of third-party cookies within Google’s Incognito Mode.<sup>140</sup> Google’s investigation of each product area included consideration of the Google revenue impacts with respect to “personalization,” “remarketing,” and “conversion tracking.”<sup>141</sup> As detailed in the ChromeGuard study, Google personnel determined that the ChromeGuard implementation would cause an approximate \$[REDACTED] reduction in Google’s worldwide Search Ads, YouTube Ads, and Display Ads revenue during the remaining portion of 2020 and an approximate [REDACTED] reduction in the same during full-year 2021.<sup>142</sup>

**Figure 17**  
**Ads Impact and Response from “ChromeGuard” and “Samesite & Secure” Launches –**  
**ChromeGuard Impact<sup>143</sup>**



#### **6.8. Potentially Available Measures of Monetary Relief**

69. I understand from Counsel that the monetary relief available for the alleged wrongful conduct specified in Plaintiffs’ Fourth Amended Complaint and not dismissed by the Court’s prior orders includes Plaintiffs’ actual damages (which would include restitution), and Google’s unjust

<sup>140</sup> GOOG-RDGZ-00188469-491 at 469.

<sup>141</sup> GOOG-RDGZ-00188469-491 at 472-475.

<sup>142</sup> GOOG-RDGZ-00188469-491 at 470.

<sup>143</sup> GOOG-RDGZ-00188469-491 at 470.

enrichment (also referred to as non-restitutionary disgorgement). I understand from Counsel that nominal damages and injunctive relief are also available for the alleged wrongful conduct.

70. I also understand that in seeking unjust enrichment, Plaintiffs may present evidence of the total or gross amount of the benefit from the alleged misconduct, or a reasonable approximation thereof, and then the defendant may present evidence of any further costs, expenses, and other deductions to show the actual or net benefit the defendant received.

## 7. UNJUST ENRICHMENT

71. In my opinion, the most appropriate and reliable bases for quantifying Google's unjust enrichment from the alleged wrongful conduct are Google's previously discussed App Promo and AdMob income statements, as well as Google's contemporaneous analyses of the financial impact to Google of certain settings that I understand are related to WAA/sWAA. More specifically, it is my opinion that these contemporaneous analyses represent the best available evidence for calculating unjust enrichment based on the actual assumptions, inputs, and methodologies that Google personnel used in the normal course of business to measure the financial impact of related changes in settings and privacy controls.

72. As discussed in Section 6.7, these contemporaneous analyses include the [REDACTED] study, through which Google examined the financial impact of blocking third-party cookies by default in Chrome Incognito mode. I have therefore used relevant elements of Google's own analyses, together with appropriate adjustments and requisite apportionments, to quantify Google's unjust enrichment attributable to the alleged wrongful conduct for the two Classes and for the period July 1, 2016, through December 31, 2022.

73. Based on this data and as detailed in the sections below, my unjust enrichment analyses quantify the portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads [REDACTED]

[REDACTED] This segmentation is intended to assist the trier of fact in determining Google's unjust enrichment under the assumption that the alleged wrongful conduct caused Google to be unjustly enriched by an amount equal to either:

- The portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads [REDACTED]

[REDACTED] ("Scenario One");

or

- The portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads [REDACTED]

[REDACTED] ("Scenario Two").

74. As previously discussed, and as used throughout this report, "WAA/sWAA-Off Data" is intended to collectively refer to all data that Google collects relating to user activity on non-Google mobile applications by way of the Firebase SDK and/or the GMA SDK while a user is signed into Google and has WAA or sWAA turned off.



75. Based on my understanding of the available record and my discussions with Mr. Hochman, I understand that these liability scenarios would have distinct impacts on Google's U.S. App Promo, AdMob, and Ad Manager businesses:
- Under Scenario One, I understand that Google could serve App Promo, AdMob, and Ad Manager advertisements to WAA/sWAA-Off users, and charge advertisers for that service, but Google could not collect, save, and/or use WAA/sWAA-Off Data for purposes of tracking any conversion events.<sup>144</sup> As such, Google's unjust enrichment under Scenario One would equate to [REDACTED]
  - Under Scenario Two, I understand that, in addition to not being able to use WAA/sWAA-Off Data for purposes of tracking conversions in App Promo, AdMob, and Ad Manager (as described in Scenario One), Google would also be precluded from collecting, saving, and using WAA/sWAA-Off Data for purposes of serving and monetizing advertisements in AdMob and Ad Manager, as Google would not collect or save AdMob or Ad Manager ad requests, impressions, and clicks from the corresponding user devices.<sup>145</sup> As such, Google's unjust enrichment under Scenario Two would equate to [REDACTED]
76. The information contained in this report and corresponding schedules can therefore be used to quantify and determine Google's unjust enrichment pertaining to the above scenarios during the period July 1, 2016 through December 31, 2022.<sup>146</sup>

### 7.1. Analysis of Google's Unjust Enrichment Under Scenario One

77. As previously discussed, my unjust enrichment analyses quantify the portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads revenues and attendant profits attributable to the alleged wrongful conduct under two liability scenarios identified by Counsel. The first of these scenarios (*i.e.*, Scenario One) is intended to assist the trier of fact in determining Google's unjust enrichment under the assumption that the alleged wrongful conduct caused Google to be unjustly enriched by an amount equal to the portion of Google's U.S. App Promo, AdMob, and Ad Manager app ads revenues and attendant profits attributable to its saving and use of WAA/sWAA-Off Data for purposes of tracking advertising conversions.
78. Based on my understanding of the available record and my discussions with Mr. Hochman, I understand that, under Scenario One, Google could serve App Promo, AdMob, and Ad Manager advertisements to WAA/sWAA-Off users, and charge advertisers for that service, but Google

<sup>144</sup> Discussions with Mr. Hochman. I understand conversion tracking correlates a user's interaction with an advertisement and that user's subsequent activity. See, for example, "About conversion tracking" per Google Ads Help at <https://support.google.com/google-ads/answer/1722022?hl=en> (accessed February 10, 2023).

<sup>145</sup> Discussions with Mr. Hochman.

<sup>146</sup> While my current calculations of Google's unjust enrichment cover the period July 1, 2016, through December 31, 2022, I could readily update these calculations to cover subsequent periods through the date of trial. Relatedly, to the extent that the trier of fact determines that the calculation of unjust enrichment should start on a date later than July 1, 2016, the calculations attached to this report can be readily modified to reflect that alternative period.

could not collect, save, and/or use WAA/sWAA-Off Data for purposes of tracking any conversion events.<sup>147</sup> As such, Google's unjust enrichment under Scenario One would equate to [REDACTED]

79. As detailed in the attached schedules and summarized in the figure below, I have determined that [REDACTED] under Scenario One totals approximately [REDACTED] during the period July 1, 2016 through December 31, 2022:

**Figure 18**  
**Summary of Google's Unjust Enrichment – Scenario One:**  
**July 1, 2016 – December 31, 2022<sup>148</sup>**

	Jul. - Dec.							
	2016	2017	2018	2019	2020	2021	2022	Total
[REDACTED]	[REDACTED]							
App Promo - Scenario 1								
AdMob - Scenario 1								
Ad Manager - Scenario 1								
Total								

80. My analysis of this scenario is based on my review and consideration of the available record, and detailed in the subsequent sections of this report and corresponding schedules.

#### **7.1.1. Unjust Enrichment Scenario One: App Promo**

81. As discussed in Section 7.1, I understand from Mr. Hochman that, under Scenario One and with respect to App Promo, Google could serve App Promo advertisements to WAA/sWAA-Off users, and charge advertisers for that service, but Google could not collect, save, and/or use WAA/sWAA-Off Data to track any conversion events with GA4F.<sup>149</sup>

82. Based on my review of the available record and my analyses detailed below, I have determined that [REDACTED]

<sup>147</sup> Discussions with Mr. Hochman.

<sup>148</sup> Schedule 1.3.

<sup>149</sup> Discussions with Mr. Hochman. See also, for example, Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to Interrogatory No. 17, pp. 15-16.



Г. 152

155

157

for the periods July 1, 2016 to December 31, 2016 and full-year 2022.<sup>158</sup> As detailed on Schedule 7.2, I estimated the partial-year 2016 period as a function of the change in

See GOOG-RDGZ-00067396-438 at 403.

See, for example, Deposition of Belinda Langner, December 15

GOOG-RDGZ-00184247 and GOOG-RDGZ-00185744.

GOOG-RDGZ-00184247 and GOOG-RDGZ-00185744.

See, for example, Deposition of Belinda Langner, Decem

See, for example, GOOG-RDGZ-00188768; GOOG-RDGZ-00205831. As of the filing of this report, I am not

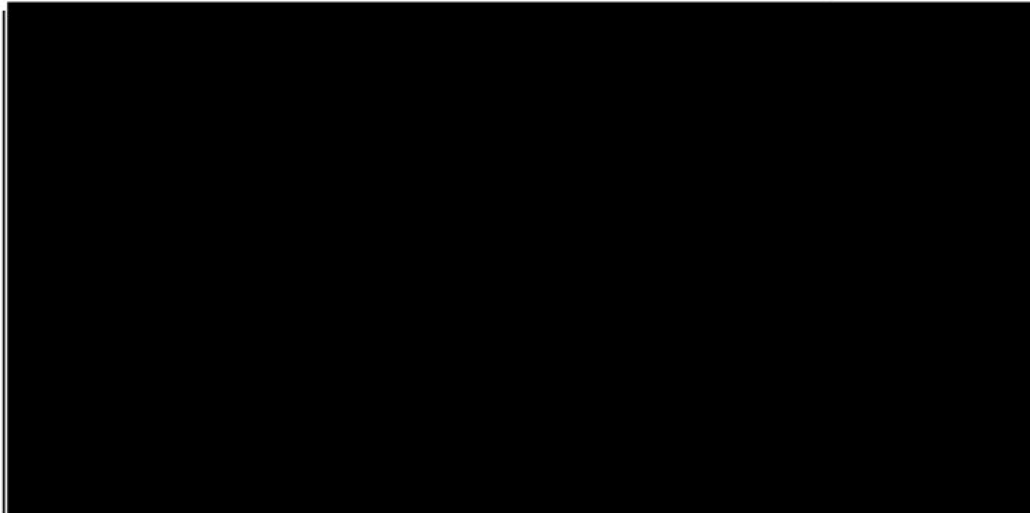
aware of any evidentiary basis for Google to contend that there are *additional* incremental operating costs that would be reasonably deducted from my determination of revenues net of traffic acquisition costs. To the contrary, I understand from Mr. Hochman that it would be unreasonable to assume that any meaningful measure of incremental costs was associated with the alleged wrongful conduct, and that Google's infrastructure-heavy business would preclude any meaningful cost savings from the envisioned change to such a small portion of its operations. To the extent that Google or its experts identify documents indicating that a further deduction of incremental costs may be appropriate and that these costs can be accurately calculated, I reserve the right to review that information and amend my analyses, if necessary.

## Schedules 7.2



**Figure 19**

[REDACTED] : 2016 – 2022<sup>161</sup>



87.

[REDACTED]

88.

[REDACTED]

<sup>164</sup> As detailed on Schedule 2.2 and summarized in the figure below, application

<sup>159</sup> Schedules 7.2 and 7.3; GOOG-RDGZ-00067396-438 at 403.

<sup>160</sup> Schedules 2.2 and 9.1.

<sup>161</sup> Schedule 2.2.

<sup>162</sup> Schedule 2.2.

<sup>163</sup> GOOG-RDGZ-00188768 at tab “Matrix.”

See Schedule 15.1.

<sup>164</sup> Discussions with Mr. Hochman.

[REDACTED]

**Figure 20**

[REDACTED] :

**July 1, 2016 – December 31, 2022**

[REDACTED]

89.

[REDACTED]<sup>165</sup>

90.

As detailed on Schedule 2.2 and summarized in the figure below.

[REDACTED] :

**Figure 21**

[REDACTED] :

**July 1, 2016 – December 31, 2022<sup>167</sup>**

[REDACTED]

91.

[REDACTED]

---

<sup>165</sup> Schedule 2.2.

<sup>166</sup> Schedule 13.1; GOOG-RDGZ-00204475. As detailed on Schedule 13.1,

[REDACTED] Schedules 1.1B

through 4.4B.

<sup>167</sup> Schedule 2.2.



[REDACTED]

### Figure 22

\_\_\_\_\_

July 1, 2016 – December 31, 2022<sup>109</sup>

\_\_\_\_\_

### 7.1.2. Unjust Enrichment Scenario One: AdMob

92. As discussed in Section 7.1, I understand from Mr. Hochman that, under Scenario One and with respect to AdMob, Google could serve AdMob advertisements to WAA/sWAA-Off users, and charge advertisers for that service, but Google could not collect, save and/or use WAA/sWAA-Off Data to track any conversion events.<sup>170</sup>
93. Based on my review of the available record and my analyses detailed below, I have determined that it is possible to quantify Google's resulting unjust enrichment as the portion of [REDACTED]  
[REDACTED].
94. The most appropriate starting point for this analysis is Google's global [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]<sup>172</sup>
95. [REDACTED]  
[REDACTED] While Alphabet publicly reports the percentage of its total annual revenues that it attributes to the United States (ranging from approximately 45.7% to 47.7% over

<sup>168</sup> Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to Interrogatory No. 17, pp. 15-16. The Interrogatory Response refers to "App Campaign Ad Revenue" which I understand to be synonymous with App Promo.

169 Schedule 2.1.

170 Discussions with Mr. Hochman.

<sup>171</sup> GOOG-RDGZ-00187666; GOOG-RDGZ-00187665.

172 Schedule 6.5.

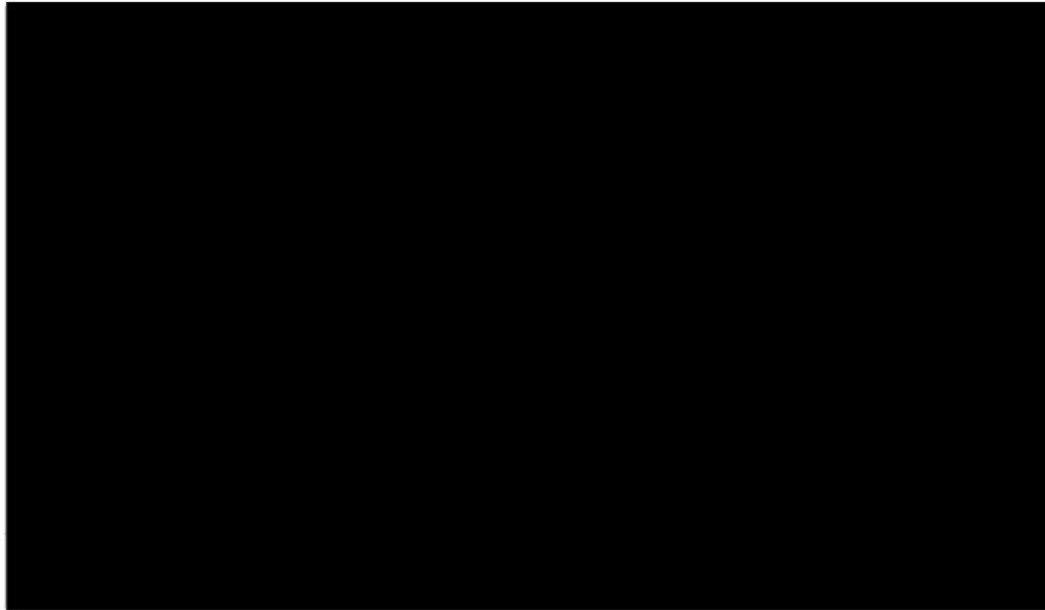
the 2016 through 2022 period).<sup>173</sup>

[REDACTED]

<sup>174</sup>

**Figure 23**

<sup>175</sup>

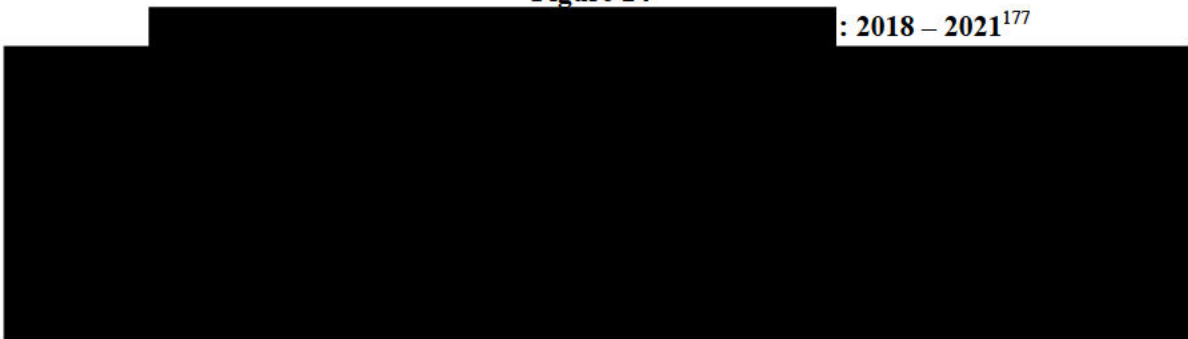


96.

[REDACTED]

**Figure 24**

: 2018 – 2021<sup>177</sup>



<sup>173</sup> Schedule 9.1.

<sup>174</sup> GOOG-RDGZ-00067396-438 at 396 and 403.

<sup>175</sup> GOOG-RDGZ-00067396-438 at 403. Emphasis added.

<sup>176</sup> Schedule 7.6.

<sup>177</sup> Schedule 6.5.

97.

[REDACTED]

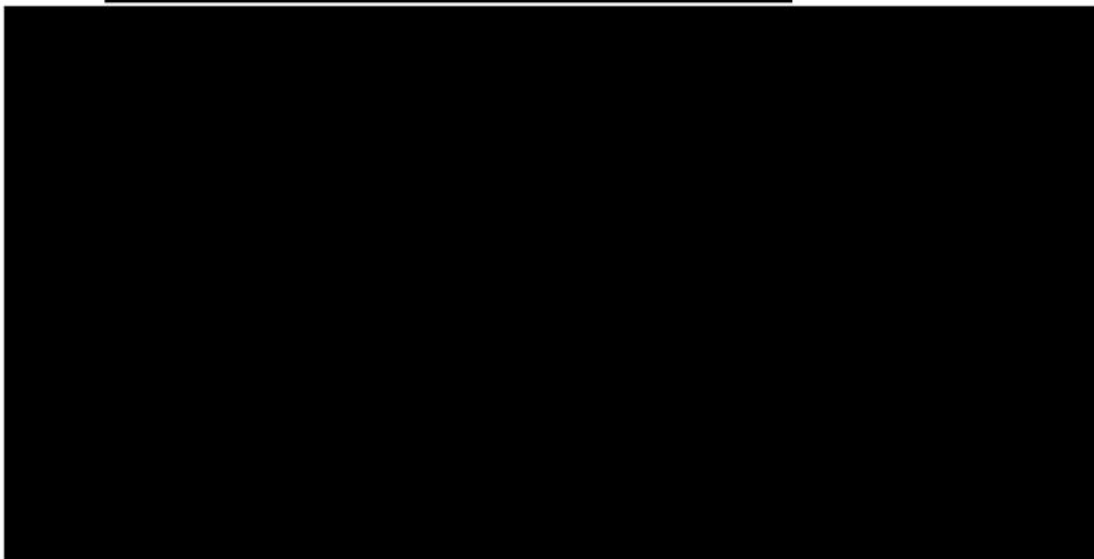
<sup>178</sup>

98.

[REDACTED]

**Figure 25**

[REDACTED] : 2016 – 2022<sup>182</sup>



99.

[REDACTED]

---

<sup>178</sup> Schedules 6.1, 6.2, and 6.3.

<sup>179</sup> Schedule 6.4.

<sup>180</sup> Schedules 6.2, 6.3.

<sup>181</sup> Schedule 6.1.

<sup>182</sup> Schedule 6.1.

<sup>183</sup> Discussions with Mr. Hochman.

<sup>184</sup> See, for example, GOOG-RDGZ-00192788-845 at 793.

\_\_\_\_\_

1. [REDACTED]

\_\_\_\_\_

1. [REDACTED]

1. [REDACTED]

1. [REDACTED]

1. [REDACTED]

§ 191

100. As detailed in Schedule 3.4 and summarized in the figure below,

<sup>185</sup> Schedule 8.3; GOOG-RDGZ-00188768, tab “Matrix”; GOOG-RDGZ-00188768, tab “App Display Ads” and tab “Web Display Ads.”

<sup>186</sup> Schedule 8.2; GOOG-RDGZ-00185743, tab “Pivot Table.” Google only produced this disaggregation of App Promo revenues for the period Q3 2019 through Q4 2021.

187 Schedule 8.1.

188 Schedule 7.1.

189 GOOG-RDGZ-00072319-365 at 328.

<sup>190</sup> GOOG-RDGZ-00072319-365 at 328. See also Schedule 5.3.

191 Schedule 5.1.



**Figure 26**

July 1, 2016 – December 31, 2022<sup>192</sup>

101.

**Figure 27**

July 1, 2016 – December 31, 2022<sup>194</sup>

102.

study. More specifically, in Google's assessment of the and conversion tracking, Google's "revenue impact ratio" was calculated, in part, as a function of a

<sup>192</sup> Schedule 3.4.

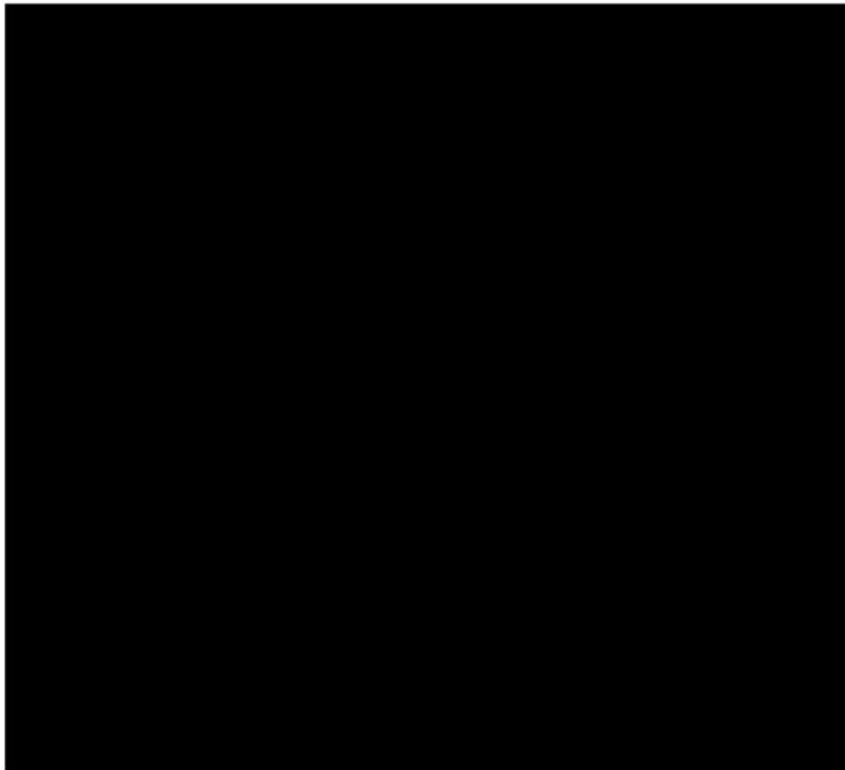
<sup>193</sup> Schedule 3.4, 15.1; GOOG-RDGZ-00188768 at tab "Summary."

<sup>194</sup> Schedule 3.4.

<sup>195</sup> GOOG-RDGZ-00188469-491 at 475.

**Figure 28**

ChromeGuard Study – [REDACTED] <sup>196</sup>



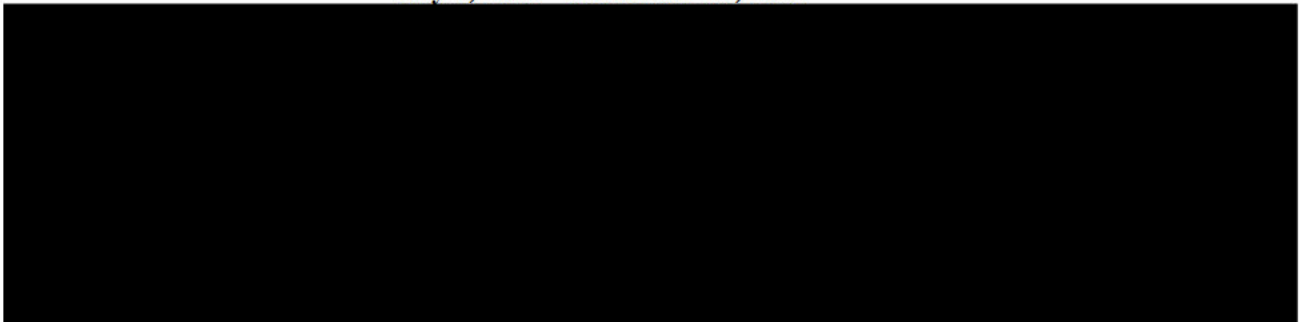
103. As detailed in Schedule 3.3 and summarized in the figure below, applying this [REDACTED]

[REDACTED]  
during the period July 1, 2016 through December 31, 2022:

**Figure 29**

[REDACTED]  
[REDACTED] :

**July 1, 2016 – December 31, 2022<sup>197</sup>**



<sup>196</sup> GOOG-RDGZ-00188469-491 at 475. Emphasis added.

<sup>197</sup> Schedule 3.3.

**7.1.3. Unjust Enrichment Scenario One: Ad Manager**

104. As discussed in Section 7.1, I understand from Mr. Hochman that, under Scenario One and with respect to Ad Manager, Google could serve Ad Manager advertisements to WAA/sWAA-Off users, and charge advertisers for that service, but Google could not collect, save, and/or use WAA/sWAA-Off Data for purposes of tracking any conversion events.<sup>198</sup>

105. Based on my review of the available record and my analyses detailed below, I have determined that [REDACTED]

106. As of the date of this report, Google has not produced [REDACTED]

107. As detailed on Schedule 5.2 and summarized in the figure below, I estimated [REDACTED]  
[REDACTED] during the period July 1, 2016 through December 31, 2022:

**Figure 30**

**July 1, 2016 – December 31, 2022<sup>200</sup>**

108. [REDACTED]

<sup>198</sup> Discussions with Mr. Hochman.

<sup>199</sup> GOOG-RDGZ-00072319-365 at 319, 328. See also Schedule 5.3.

<sup>200</sup> Schedule 5.2.

<sup>201</sup> Discussions with Mr. Hochman.

**Figure 31**

July 1, 2016 – December 31, 2022<sup>202</sup>

109.

[REDACTED]

during the period July 1, 2016  
through December 31, 2022:

**Figure 32**

July 1, 2016 – December 31, 2022<sup>204</sup>

110.

[REDACTED]

<sup>202</sup> Schedule 4.4.

<sup>203</sup> Schedule 4.4; GOOG-RDGZ-00188768 at tab “Summary.”

<sup>204</sup> Schedule 4.4.

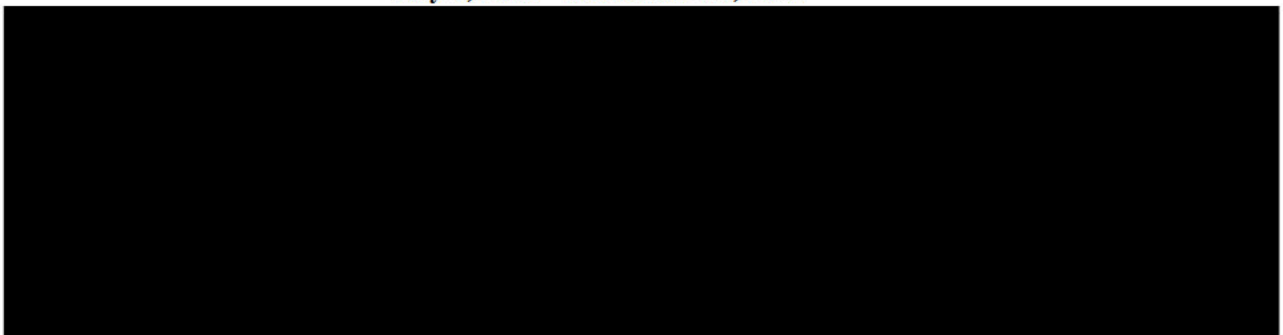




[REDACTED]

114. As detailed in the attached schedules and summarized in the figure below, [REDACTED] during the period July 1, 2016 through December 31, 2022:

**Figure 35**  
**Summary of Google's Unjust Enrichment – Scenario Two:**  
**July 1, 2016 – December 31, 2022<sup>208</sup>**



115. My analysis of this scenario is based on my review and consideration of the available record and detailed in the subsequent sections of this report and corresponding schedules.

#### **7.2.1. Unjust Enrichment Scenario Two: App Promo**

116. I understand that the [REDACTED] during the period July 1, 2016 through December 31, 2022.<sup>210</sup>

#### **7.2.2. Unjust Enrichment Scenario Two: AdMob**

117. As discussed in Section 7.2, I understand that [REDACTED]  
[REDACTED]  
<sup>211</sup> Google's unjust enrichment under Scenario Two and specific to

<sup>207</sup> Discussions with Mr. Hochman.

<sup>208</sup> Schedule 1.4.

<sup>209</sup> Discussions with Mr. Hochman.

<sup>210</sup> Schedule 2.1.

<sup>211</sup> Discussions with Mr. Hochman.

AdMob would therefore [REDACTED]

118.

119.

As discussed in Section 7.1.2, [REDACTED]

**Figure 36**

**July 1, 2016 – December 31, 2022<sup>212</sup>**

120.

[REDACTED]<sup>213</sup> For example, the previously discussed ChromeGuard study document indicates that the “revenue impact due to loss of personalization” is [REDACTED]%.<sup>214</sup> Similarly, and as summarized in the figure below, the previously discussed [REDACTED]

<sup>212</sup> Schedule 3.2.

<sup>213</sup> Discussions with Mr. Hochman. See also GOOG-RDGZ-00188768; GOOG-RDGZ-00205831; and GOOG-RDGZ-00188469-491.

<sup>214</sup> GOOG-RDGZ-00188469-491 at 475.

**Figure 37**

<sup>215</sup>

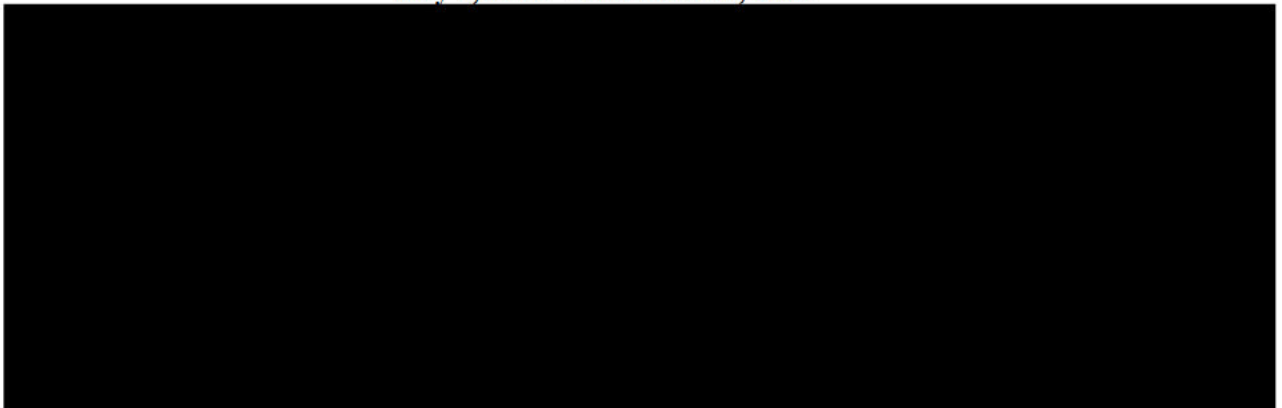


121. I therefore conservatively applied a [REDACTED]  
[REDACTED]  
[REDACTED] during the period July 1, 2016  
through December 31, 2022:

**Figure 38**



[REDACTED]  
[REDACTED] :  
July 1, 2016 – December 31, 2022<sup>6</sup>



122. Having calculated this [REDACTED]  
[REDACTED]  
[REDACTED] As detailed in Schedule 3.1 and summarized  
in the figure below, this calculation yields approximately [REDACTED]

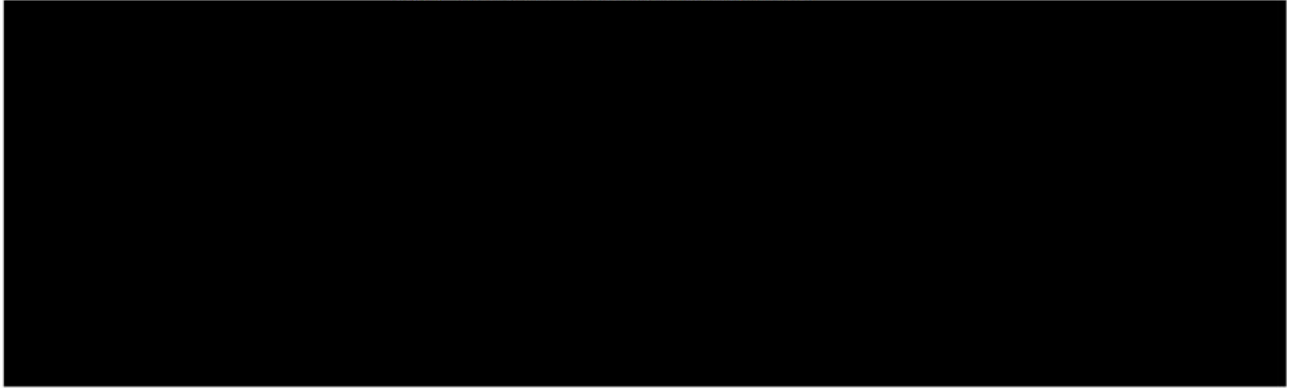
<sup>215</sup> Schedule 14.1; GOOG-RDGZ-00188768 at tab “Matrix.”

<sup>216</sup> Schedule 3.2. I understand from Mr. Hochman that Google may serve personalized ads to WAA/sWAA-Off users, relying on information collected when their WAA/sWAA setting was on. My adjustment is therefore conservative.



under Scenario Two specific to AdMob during the period July 1, 2016 through December 31, 2022:

**Figure 39**  
**Unjust Enrichment Scenario Two – AdMob:**  
**July 1, 2016 – December 31, 2022<sup>217</sup>**



### 7.2.3. Unjust Enrichment Scenario Two: Ad Manager

123. As discussed in Section 7.2, I understand that under Scenario Two, in addition to not being able to use WAA/sWAA-Off Data for purposes of tracking conversions in Ad Manager (as described in Scenario One), Google would also be precluded from collecting, saving, and/or using WAA/sWAA-Off Data for purposes of serving and monetizing advertisements in Ad Manager, as Google would not collect or save Ad Manager ad requests, impressions, and clicks from the corresponding user devices.<sup>218</sup>

124. Google's unjust enrichment under Scenario Two and specific to Ad Manager would therefore

[REDACTED]

125.

[REDACTED]

126. As discussed in Section 7.1.3, I previously

[REDACTED]

during the period July 1, 2016 through December 31, 2022 (*i.e.*, approximately

[REDACTED] As detailed in Schedule 4.2 and summarized in the figure below, subtracting the latter from the former results in approximately

[REDACTED]

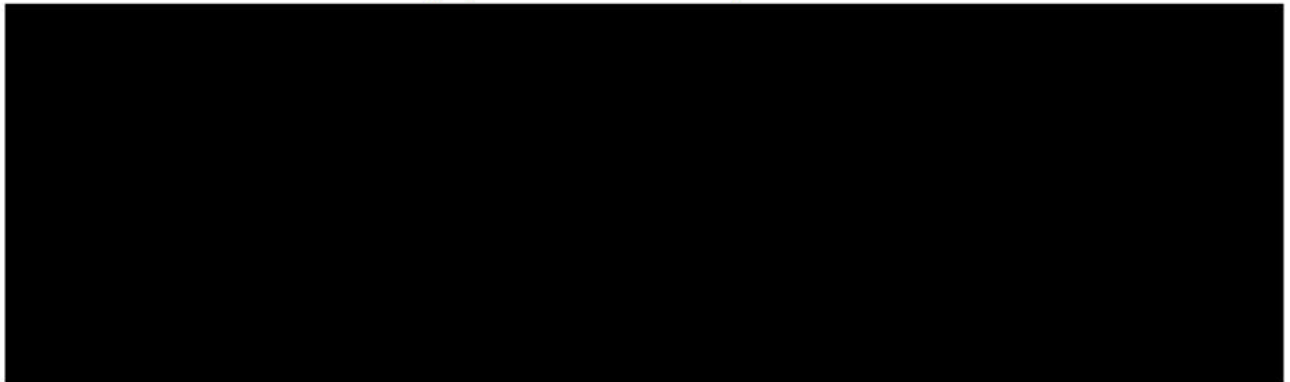
<sup>217</sup> Schedule 3.1.

<sup>218</sup> Discussions with Mr. Hochman.

**Figure 40**

[REDACTED]  
[REDACTED]:

**July 1, 2016 – December 31, 2022**



127.

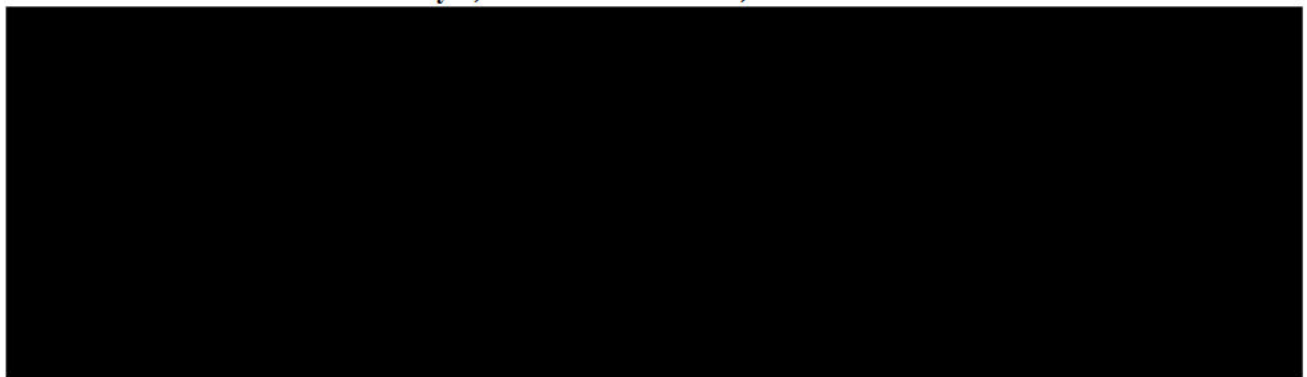
[REDACTED]  
[REDACTED]  
[REDACTED]

uring the period July 1, 2016 through December 31, 2022:

**Figure 41**

[REDACTED]  
[REDACTED]

**July 1, 2016 – December 31, 2022**



128.

[REDACTED]  
[REDACTED]  
[REDACTED]

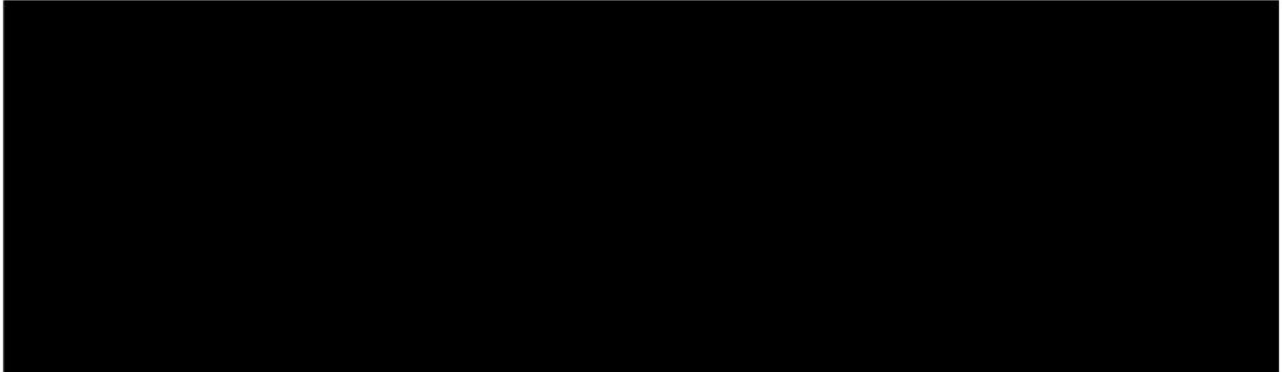
2022: during the period July 1, 2016 through December 31,

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<sup>219</sup> Schedule 4.2.

<sup>220</sup> Schedule 4.2.

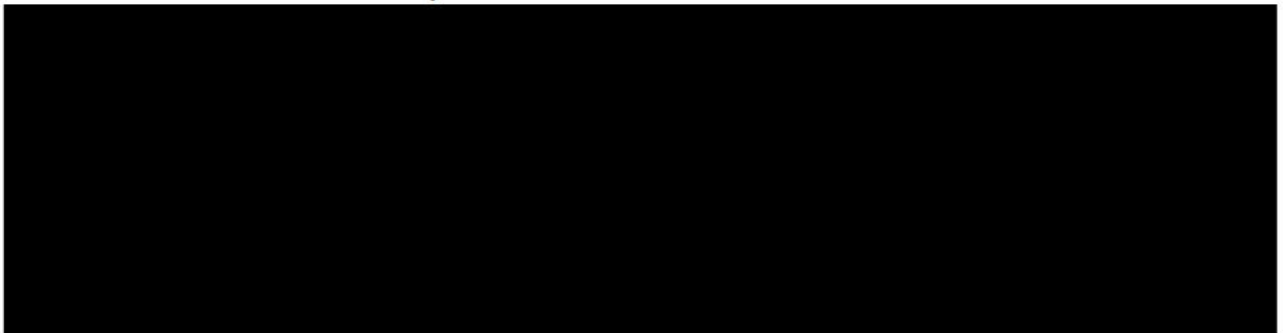
**Figure 42**  
**Unjust Enrichment Scenario Two – Ad Manager:**  
**July 1, 2016 – December 31, 2022<sup>221</sup>**



**7.2.4. Unjust Enrichment Scenario Two: Conclusion**

129. As detailed in Schedule 1.4 and summarized in the figure below, I have determined that [REDACTED] during the period July 1, 2016 through December 31, 2022:

**Figure 43**  
**Summary of Google's Unjust Enrichment – Scenario Two:**  
**July 1, 2016 – December 31, 2022<sup>222</sup>**



**8. ACTUAL DAMAGES**

130. As previously discussed, my assignment in this matter also included an assessment of the feasibility of identifying and quantifying measures of actual damages attributable to Google's alleged wrongful conduct during the period July 1, 2016 through December 31, 2022. In my opinion, and as described below, such actual damages can be determined as a function of the payments necessary to incentivize an individual to knowingly surrender the choice to keep activity on mobile apps private and allow an organization to track app activity data. I have therefore identified and considered various indicators of both the payments that Google and other organizations have paid to individuals to track their online activity and the fees that individuals

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<sup>221</sup> Schedule 4.1.

<sup>222</sup> Schedule 1.4.

have paid to various organizations in their attempts to increase online privacy and/or avoid tracking.

131. As discussed below, it is my opinion that the most probative indicator of the harm to WAA/sWAA-Off users from Google's collection, saving, and/or use WAA/sWAA-Off Data, and the value of that WAA/sWAA-Off Data, is derived from one aspect of the monthly compensation structure to participants in the Ipsos Screenwise Panel, a consumer research study conducted for Google by Ipsos. More specifically, it is my opinion that the baseline payment to Screenwise Panel participants of \$3 per month for using a Screenwise meter app on a single mobile device represents a conservative indicator of the monthly payment necessary for an individual to knowingly surrender the choice to keep their app activity private and allow Google to track all app activity data, regardless of that individual's WAA or sWAA settings. While the Screenwise compensation structure applies this \$3 payment per device per month, it is my opinion that actual damages through December 2022 can be conservatively measured by applying this \$3 payment on a one-time basis to the number of Class Member Devices, where a single Class Member Device represents a mobile device (smartphone or tablet) used with WAA/sWAA off at least once during the Class Period through December 2022. I describe my analysis of Class Member Devices in Section 8.2 below.

### **8.1. Analysis of the Value of WAA/sWAA-Off Data Acquired by Google**

132. As previously discussed, I searched for and analyzed various indicators of both the payments that Google and other organizations have paid to individuals in order to transparently track their online activity, and the fees that individuals have paid to various organizations in their attempts to increase privacy and/or avoid tracking. I therefore identified and considered evidence of the following:

- Google's payments for user data;
- Users' willingness to pay to prevent data collection; and
- Research organizations' willingness to pay for data collection.

133. My analysis of these indicators is discussed below.

#### **8.1.1. Google's Payments for User Data**

134. I have identified and considered the following indicator of Google's payments for user data.

##### **Ipsos Screenwise Panel**

135. Since 2012, Google has utilized consumer research studies conducted by Ipsos, a global market research company,<sup>223</sup> to collect information on how users browse the internet.<sup>224</sup> Through these

<sup>223</sup> "Ipsos Screenwise Panel Cookie Policy" per Ipsos at <https://screenwisepanel.com/cookie-policy> (accessed February 10, 2023).

<sup>224</sup> "About the Ipsos Screenwise Panel" per Ipsos at <https://screenwisepanel.com/home> (accessed February 10, 2023). See also "Google Screenwise pays opt-in users for expanded web tracking" at <https://www.theverge.com/2012/2/8/2785751/google-screenwise-panel-web-monitoring-knowledge-networks> (accessed February 10, 2023) and "Google paying users to track 100% of their Web usage via little black box" per Ars Technica at <https://arstechnica.com/gadgets/2012/02/google-paying-users-to-track-100-of-their-web-usage-via-little-black-box/> (accessed February 10, 2023).



studies, which are marketed as the Ipsos Screenwise Panel (“Screenwise Panel”), members of selected U.S. households are paid to voluntarily link their devices, operate a special router, and recruit other members of the household to participate in a comprehensive online data collection process.<sup>225</sup>

136. According to the Ipsos Screenwise Panel privacy and cookie policies, Google uses the collected information to “better understand how consumers use technology and digital media.”<sup>226</sup> According to the related “Google Panel Privacy Policy,” which describes “*how Google LLC will collect, store, use, and share information obtained from the hardware, software, and other Panel metering technology (collectively ‘Meters’) used in connection with the Panel,*” the information collected via the “Meters” includes a vast array of data that can be combined with “*other data collected by Google when you’re using Google products and services as a Google user*”.<sup>227</sup>

**Figure 44**  
**Google Panel Privacy Policy Summary**<sup>228</sup>

**Summary**

Google collects data through its meters, including, for example:

- The content and advertising shown on your devices, and your interactions with that content and advertising, including videos you watched, your emails and SMS, and web pages you’ve visited.
- Information you input (e.g., text you type) into your devices.
- Cookies and device information.

Your participation in the Panel is voluntary. You may end your participation in the Panel at any time by following the instructions provided to you during the sign-up process. You can also temporarily pause or turn off metering at any time.

Google may combine the data collected with other data collected by Google when you’re using Google products and services as a Google user. For example, we may combine your panel data with information in your Google Account(s) (e.g., which ads you viewed), or with anonymous or pseudonymous identifiers (such as cookies or unique device identifiers) used by Google products and services.

Google will use the data above in connection with existing Google products and services, to provide, maintain, and improve them, and to develop new ones. For example, we may use this data to conduct analytics and measurement to understand how our services are used, as well as conduct ads-related market research. As another example, we may use this data to improve Google products such as Search, Android, YouTube and Google Assistant.

137. The Google Panel Privacy Policy states that “[t]hese Meters help Google learn about your interaction with technology and digital media on various devices. This includes your desktop and

<sup>225</sup> “About the Ipsos Screenwise Panel” per Ipsos at <https://screenwisepanel.com/home> (accessed February 10, 2023). See also GOOG-RDGZ-00187578-622 at 580 and GOOG-RDGZ-00187623-624.

<sup>226</sup> “Ipsos Screenwise Panel Cookie Policy” per Ipsos at <https://screenwisepanel.com/cookie-policy> (accessed February 10, 2023) and “Ipsos Screenwise Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/ipsos-Sow-privacy-policy> (accessed February 10, 2023).

<sup>227</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

<sup>228</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023). Emphasis added.

*laptop computers, wireless routers, mobile phones, tablets, wearable devices, automotive items connected to the Internet, and other devices you may use to consume and interact with digital content throughout the day.*”<sup>229</sup> The policy also states that digital media and digital content are broadly defined to include *“your interactions with Internet browsers and websites, mobile and tablet applications and software, the devices you use to access digital media and digital content, TV content, and any other electronic delivery systems of digital content.”*<sup>230</sup>

138. The Google Panel Privacy Policy explains that “[w]hen a Meter is placed on a device, it potentially will collect and record all interactions with that device. For example, when a Meter is placed on your mobile phone, it potentially will record everything you see on your screen and everything you tap, type, swipe, or otherwise input.”<sup>231</sup> The policy goes on to further define the scope of the information collected, which includes, among other items, “every web page you’ve visited and all of your interactions with those web pages,” “your use of applications and widgets (collectively ‘apps’), software, and operating systems,” “the content you see on your screen or device at any given time,” and “[i]nformation you provide or otherwise input when visiting websites, using apps or using a TV user interface [including] search terms and personal information you provide to a website, TV user interface, or app, including your name, email address, home/work address, telephone number, Social Security number, or credit card number.”<sup>232</sup>
139. Based on my review of the Google Panel Privacy Policy and its detailed itemization of the information collected, it is readily apparent that participants in the Screenwise Panel voluntarily and knowingly allow Google to track all online activity on the device and, in doing so, relinquish any sense of online data privacy – actual or perceived – related to that online activity for as long as they participate in the study. Further, while the policy states that past participants can formally request the deletion of information collected during the study, and that “Google will make reasonable efforts to comply with such requests,” the policy also states that Google “may aggregate, anonymize, or otherwise de-identify any personal information instead of deleting it” and “[w]hen your participation in the Panel ends, Google may continue to store, use, and share the information previously obtained.”<sup>233</sup>
140. Participants in the Screenwise Panel receive various payments and rewards for their activity. According to the limited amount of compensation information available on the Screenwise Panel website, the financial consideration to panel participants can include “rewards” valued at \$120 for qualifying for the study and installing a special router, as well as monthly payments of up to \$16 per household member:

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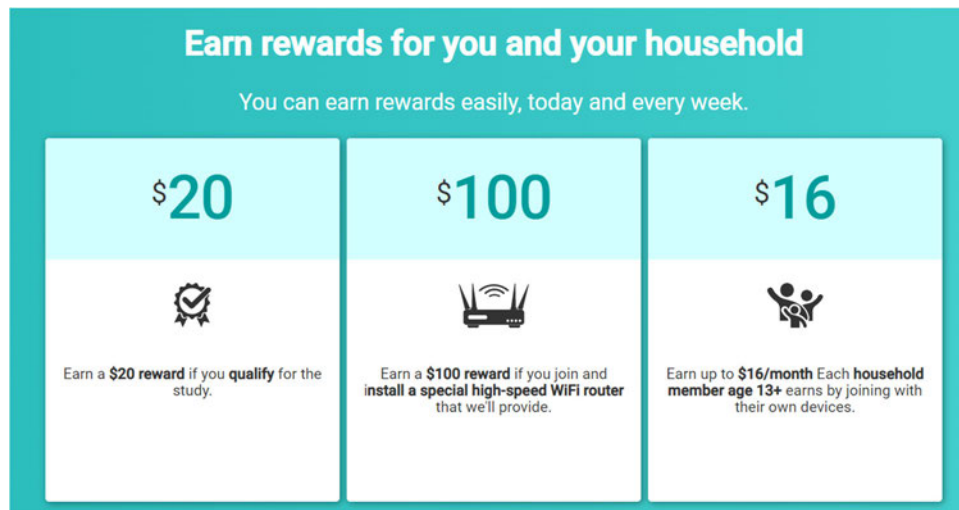
<sup>229</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

<sup>230</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

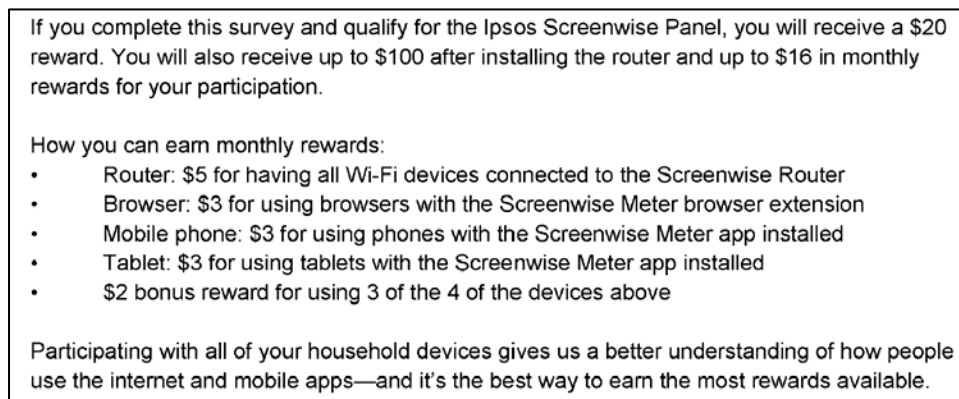
<sup>231</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

<sup>232</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

<sup>233</sup> “Google Panel Privacy Policy” per Ipsos at <https://screenwisepanel.com/google-panel-privacy-policy> (accessed February 10, 2023).

**Figure 45****Ipsos Screenwise Panel – Summary of Rewards and Payments per Screenwisepanel.com**<sup>234</sup>

141. Additional information regarding this compensation structure is found in the text of a “Screenwise Panel Recruitment Survey” produced in this matter:

**Figure 46****Ipsos Screenwise Panel – Summary of Rewards and Payments per Recruitment Survey**<sup>235</sup>

142. While monthly payments and other rewards to a single Screenwise Panel participant can reach or exceed \$16 per month, the minimum recurring payment to Screenwise Panel participants for their use of a Screenwise browser extension or a Screenwise Meter app on a single device (including both mobile phones and tablets) is \$3 per month.

<sup>234</sup> “About the Ipsos Screenwise Panel” per Ipsos at <https://screenwisepanel.com/home> (accessed February 10, 2023).

<sup>235</sup> GOOG-RDGZ-00187578-622 at 580.

### 8.1.2. Consumers' Willingness to Pay to Prevent Data Collection or Block Advertisements

143. I have also identified and considered the following indicator of consumers' willingness to pay in their attempts to increase online privacy and/or prevent their data from being saved.

#### AT&T's GigaPower Campaign & Internet Preferences Program

144. In 2013, AT&T launched its "GigaPower" all-fiber network in parts of Austin, Texas.<sup>236</sup> The cost was \$70 per month if customers agreed to participate in AT&T's "Internet Preferences" program, which would use customers' personal data to serve targeted advertisements, but an extra \$29 per month (for a total of \$99) for customers who did not opt into the targeted advertisement program.<sup>237</sup> AT&T explained that it uses "various methods to collect web browsing information" and that through Internet Preferences, user information such as search terms and website visits could be used for targeted advertising.<sup>238</sup>

*[The \$70 price] is available with your agreement to participate in AT&T Internet Preferences. AT&T may use your Web browsing information, like the search terms you enter and the Web pages you visit, to provide you relevant offers and ads tailored to your interests.*<sup>239</sup>

145. AT&T also explained that the price differential was due to AT&T's ability to generate advertising revenue:

*We can offer a lower price to customers participating in AT&T Internet Preferences because advertisers will pay us for the opportunity to deliver relevant advertising and offers tailored to our customer's interests.*<sup>240</sup>

146. AT&T expanded its GigaPower and Internet Preferences program to Kansas City, MO and parts of Kansas in February 2015.<sup>241</sup> However, in September 2016, AT&T announced that it would "sunset" the Internet Preferences program beginning in October 2016 and charge all customers the best available rate for their area and speed tier.<sup>242</sup> AT&T characterized the end of the program as

<sup>236</sup> "AT&T offers gigabit Internet discount in exchange for your Web history" per Ars Technica at <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/> (accessed February 10, 2023).

<sup>237</sup> "AT&T offers gigabit Internet discount in exchange for your Web history" per Ars Technica at <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/> (accessed February 10, 2023).

<sup>238</sup> "AT&T offers gigabit Internet discount in exchange for your Web history" per Ars Technica at <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/> (accessed February 10, 2023).

<sup>239</sup> "AT&T offers gigabit Internet discount in exchange for your Web history" per Ars Technica at <https://arstechnica.com/information-technology/2013/12/att-offers-gigabit-internet-discount-in-exchange-for-your-web-history/> (accessed February 10, 2023).

<sup>240</sup> "AT&T Offers Data Privacy – for a Price" per Wall Street Journal at <https://www.wsj.com/articles/BL-DGB-40475> (accessed February 10, 2023).

<sup>241</sup> "AT&T Offers Data Privacy – for a Price" per Wall Street Journal at <https://www.wsj.com/articles/BL-DGB-40475> (accessed February 10, 2023) and "AT&T charges \$29 more for gigabit fiber that doesn't watch your Web browsing" per Ars Technica at <https://arstechnica.com/information-technology/2015/02/att-charges-29-more-for-gigabit-fiber-that-doesnt-watch-your-web-browsing/> (accessed February 10, 2023).

<sup>242</sup> "AT&T to end targeted ads program, give all users lowest available price" per Ars Technica at <https://arstechnica.com/information-technology/2016/09/att-to-end-targeted-ads-program-give-all-users-lowest-available-price/> (accessed February 10, 2023).

an attempt to simplify its offering for customers and confirmed that data collection and targeted ads would be shut off as a result of the change.<sup>243</sup>

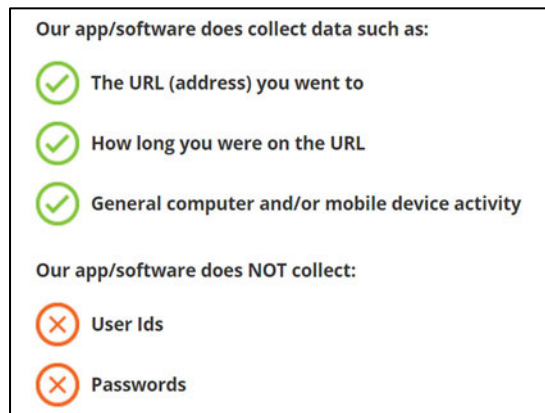
### 8.1.3. Research Organizations' Willingness to Pay for Data Collection

147. I have also identified and considered the following indicators of research organizations' willingness to pay users to allow for additional data collection.

#### Nielsen Computer and Mobile Panel

148. Nielsen, the world's leading provider of media and marketing information, tracks and collects information related to device usage to develop an understanding of consumer behavior, including what consumers view and listen to, as well as how they browse the internet.<sup>244</sup> Participants in the Nielsen Computer and Mobile Panel register demographic and device information, download a Nielsen app or computer software on devices, and ultimately earn money for their participation.<sup>245</sup> The data collected from participants in the panel includes the following:

**Figure 47**  
**What does the Nielsen Computer & Mobile App / Software Collect?**<sup>246</sup>



<sup>243</sup> “AT&T to end targeted ads program, give all users lowest available price” per Ars Technica at <https://arstechnica.com/information-technology/2016/09/att-to-end-targeted-ads-program-give-all-users-lowest-available-price/> (accessed February 10, 2023). AT&T’s GigaPower campaign was also referenced by the Federal Communications Commission (“FCC”) in a December 2016 Final Rule decision issued to Congress regarding telecommunications customer privacy. The FCC highlighted AT&T’s GigaPower program, noting that until recently, customers had to opt into AT&T Internet Preferences in order to receive GigaPower services at a lower cost. The FCC also noted that “consumers have difficulty placing a monetary value on privacy.” See “Protecting the Privacy of Customers of Broadband and Other Telecommunications Services,” Federal Communications Commission, December 2, 2016, p. 87317.

<sup>244</sup> “Nielsen Computer & Mobile Panel” per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing> (accessed February 10, 2023); “Frequently Asked Questions” per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faqen.html> (accessed February 10, 2023).

<sup>245</sup> “Nielsen Computer & Mobile Panel” per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/sdp/landing> (accessed February 10, 2023) and “What Rewards Can I Earn?” per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faqen.html> (accessed February 10, 2023).

<sup>246</sup> “What does the Nielsen Computer & Mobile App/software collect?” per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faqen.html> (accessed February 10, 2023).



149. By downloading the Nielsen app, users can earn up to \$50 per year, depending on the number of mobile devices for which the user installs and uses the app.<sup>247</sup> Nielsen describes the Computer and Mobile Panel's purpose as "*help[ing] understand how consumers use the Internet by studying the websites people like you visit*" and represents that it uses the collected information to perform research and prepare analyses regarding internet usage patterns and demographics.<sup>248</sup>

### **SavvyConnect**

150. SavvyConnect launched an application that tracks user data in 2009 and has since been performing "behavioral market research" on users' browsing activities.<sup>249</sup> Users of SavvyConnect earn rewards by downloading an app on their smartphone, tablet, and/or computer and participating in their typical web browsing activities.<sup>250</sup> SavvyConnect collects data as users browse the internet and utilizes the data it collects to identify trends in search, shopping, and entertainment.<sup>251</sup> By installing and activating SavvyConnect on a device and allowing their typical web browsing activities to be tracked, users earn \$5 per device per month for up to three devices, (up to \$15 per month for installing and activating SavvyConnect on their computer, mobile phone, and tablet).<sup>252</sup>

### **8.1.4. Conclusion Regarding the Value of WAA/sWAA-Off Data Acquired by Google**

151. Based on the above, it is my opinion that the most probative indicator of the harm to WAA/sWAA-Off users from Google's collection, saving, and/or use WAA/sWAA-Off Data, and the value of that WAA/sWAA Off Data, is derived from the monthly compensation structure for participants in the Ipsos Screenwise Panel. More specifically, it is my opinion that the baseline payment to Screenwise Panel participants of \$3 per month for using a Screenwise meter app on a single mobile device (including both smartphones and tablets) represents a conservative indicator of the monthly payment necessary for an individual to knowingly surrender the choice to keep app activity private and allow Google to track app activity data, regardless of that individual's WAA or sWAA settings. While the Screenwise compensation structure applies this \$3 payment per device per month, it is my opinion that actual damages through December 2022 can be conservatively measured by applying this \$3 payment on a one-time basis to the number of Class Member Devices, where a single Class Member Device represents a mobile device (smartphone or tablet) used with WAA/sWAA off at least once during the Class Period through December 2022. I describe my analysis of Class Member Devices in Section 8.2 below.

<sup>247</sup> "What rewards can I earn?" per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faen.html> (accessed February 10, 2023).

<sup>248</sup> "What does Nielsen use my information for?" per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faen.html> (accessed February 10, 2023) and "What is the Nielsen Computer & Mobile Panel?" per Nielsen at <https://computermobilepanel.nielsen.com/ui/US/en/faen.html> (accessed February 10, 2023).

<sup>249</sup> "How it Works" per Survey Savvy at [https://www.surveysavvy.com/how\\_it\\_works](https://www.surveysavvy.com/how_it_works) (accessed February 10, 2023).

<sup>250</sup> "What is SavvyConnect?" per Survey Savvy at <https://www.surveysavvy.com/savvyconnect> (accessed February 10, 2023).

<sup>251</sup> "What is SavvyConnect?" per Survey Savvy at <https://www.surveysavvy.com/savvyconnect> (accessed February 10, 2023).

<sup>252</sup> "SavvyConnect Monthly Participation Requirements" per Survey Savvy at <https://www.surveysavvy.com/savvyconnect/requirements> (accessed February 10, 2023) and "What is SavvyConnect?" per Survey Savvy at <https://www.surveysavvy.com/savvyconnect> (accessed February 10, 2023).

## 8.2. Analysis of Class Member Devices

152. As previously discussed, I undertook an independent analysis of the base of mobile devices (smartphones and tablets) to which the \$3 payment per device per month can be applied in the determination of total actual damages. I therefore sought to conservatively determine the number of Class Member Devices, where a single Class Member Device represents a mobile device (smartphone or tablet) used with WAA/sWAA off at least once during the Class Period through December 2022.

153. My analysis of Class Member Devices required the quantification of class members during the Class Period through December 2022 and the average number of mobile devices used by those class members.

154. As described below, I first estimated the number of class members (individual users) during the Class Period through December 2022 based on [REDACTED]

[REDACTED],<sup>253</sup> as well as survey evidence and publicly available data regarding:

- the U.S. population by age group;
- the share of U.S. minors and adults that use the internet;
- the share of U.S. minors and adults that use smartphones; and,
- the share of smartphone users that have at least one Gmail account.

155. Noting that internet and mobile device usage can vary across ages, I began with Census Bureau data regarding the 2021 U.S. population by age group. This data allows for the quantification of minors under ten years of age, minors aged ten to 17, and adults aged 18 and over.<sup>254</sup> I conservatively excluded minors under age ten. I then applied apportionment factors to each of the two remaining groups to isolate individuals that use the internet. For purposes of this adjustment, I applied a 95.0% factor from the National Center for Education Statistics to the group aged ten to 17 and a 93.0% factor from Pew Research to the group of adults.<sup>255</sup> I then applied further apportionment factors to isolate individuals with smartphones. For purposes of this adjustment, I applied a 73.0% factor derived from the “2021 Common Sense Census: Media Use by Teens and Tweens” and a 96.0% factor from the Keegan survey results regarding the share of respondents (all of whom are adults) who use smartphones.<sup>256</sup> To both of these groups, I then applied additional apportionment factors to isolate individuals with Gmail accounts (*i.e.*, approximately 84.0%, per the Keegan survey results) and the share of accounts that ever turned sWAA off (*i.e.*, approximately [REDACTED]%, per Google’s data regarding the number of U.S. accounts that were “ever active” during the four-year period between July 27, 2016 and July 27, 2020 and the portion of

<sup>253</sup> Schedule 12.7. See also GOOG-RDGZ-00187010 at tab “SWAA”. See also, Defendant Google LLC’s Supplemental Objections and Responses to Plaintiffs’ Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to Interrogatory No. 12, p. 6.

<sup>254</sup> Schedules 10.2 and 10.3. See also Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021, Census Bureau (accessed February 17, 2023).

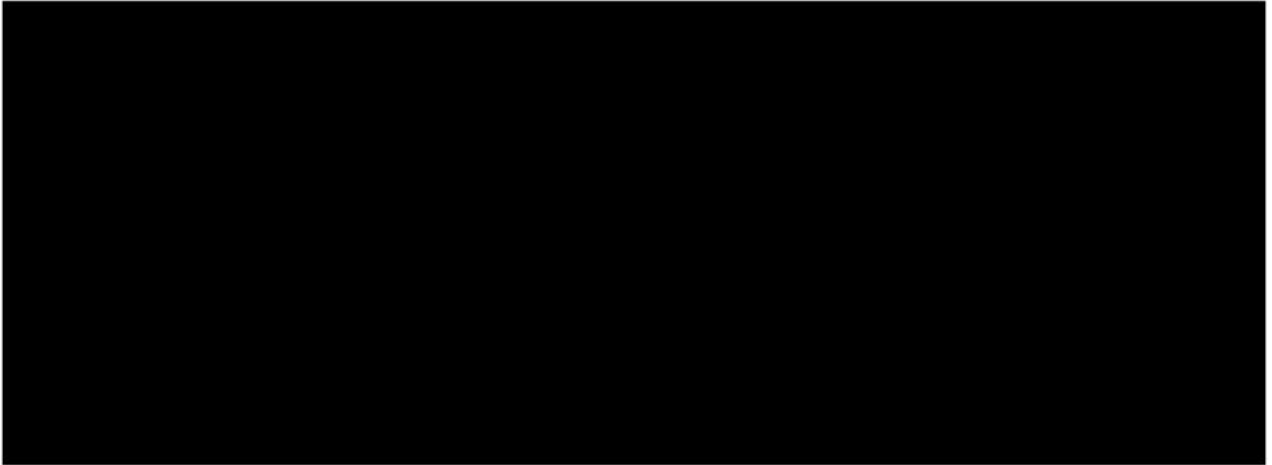
<sup>255</sup> Schedules 10.2 and 10.3. See also “Children’s Internet Access At Home,” National Center for Education Statistics, 2019, per <https://nces.ed.gov/programs/coe/indicator/cch/home-internet-access> (accessed February 17, 2023); “Internet Use Over Time,” Pew Research, 2021, per <https://www.pewresearch.org/internet/fact-sheet/internet-broadband/> (accessed February 17, 2023).

<sup>256</sup> Schedules 10.2 and 10.3. See also “The Common Sense Census: Media Use by Teens and Tweens, 2021” per [https://www.common sense media.org/sites/default/files/research/report/8-18-census-integrated-report-final-web\\_0.pdf](https://www.common sense media.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf) (accessed February 17, 2023); Schedules 10.4 and 12.5.



those accounts for which sWAA was turned off at any time during the same period).<sup>257</sup> My calculations in this regard are detailed in Schedules 10.2 and 10.3 and summarized in the figure below.

**Figure 48**  
**Estimated Class Members Through December 31, 2022**<sup>258</sup>



156. I also considered potential apportionments to 1) isolate some smaller subset of WAA/sWAA-Off mobile devices that interact with one or more mobile application that contains the Firebase and/or GMA SDKs and 2) account for users that may quickly toggle between WAA/sWAA settings. Based on my understanding of the available data, however, I determined that neither of these additional apportionments was appropriate.
157. For example, with respect to a potential apportionment to isolate the subset of WAA/sWAA-Off mobile devices that interact with one or more mobile application that uses the Firebase and/or GMA SDKs, I understand that any such adjustment would at most be de minimis and most likely zero. For example, I understand from Mr. Hochman that an individual who has WAA/sWAA off and uses ten (10) mobile apps would have a 99.9% chance of going to an app where Google collects their WAA/sWAA Data via the Firebase and/or GMA SDKs.<sup>259</sup> I evaluated this probability in light of the following considerations:
- A 2017 report by App Annie Intelligence entitled “Spotlight on Consumer App Usage” found that an average mobile phone user in the United States is using approximately 10 mobile applications per day;<sup>260</sup>

<sup>257</sup> Schedules 10.2 and 10.3. See also Schedules 12.4 and 12.7.

<sup>258</sup> Schedules 10.2 and 10.3.

<sup>259</sup> Discussions with Mr. Hochman.

<sup>260</sup> “Spotlight on Consumer App Usage” per App Annie at [http://files.appannie.com.s3.amazonaws.com/reports/1705\\_Report\\_Consumer\\_App\\_Usage\\_EN.pdf](http://files.appannie.com.s3.amazonaws.com/reports/1705_Report_Consumer_App_Usage_EN.pdf) (accessed February 10, 2023).

- The same 2017 report by App Annie Intelligence entitled “Spotlight on Consumer App Usage” indicated that the number of mobile applications used by mobile device users per month was greater than 30 in the United States;<sup>261</sup> and
- According to a July 2020 Google presentation entitled “Increase user engagement with Firebase & Google Analytics,” Firebase was used in connection with [REDACTED]<sup>262</sup>

158. Further, and with respect to a potential apportionment to account for users that may quickly toggle between WAA/sWAA settings, I understand that Google personnel generally characterize WAA and sWAA settings as “a permanent opt-out/opt-in control” that is rarely changed. Indeed, and as previously discussed in Section 6.6, I searched for evidence regarding the frequency of changes to WAA and sWAA settings or the extent to which Google personnel consider those settings to be temporary or permanent. Based on my review of the available evidence and as indicated below, it appears to be the latter:

- In an internal Google analysis updated in August 2018 and entitled [REDACTED], Google personnel indicated [REDACTED]<sup>263</sup>
- In a January 31, 2020 email from Uwe Bubeck to other Google employees, Mr. Bubeck noted that “*the fact that WAA is a pause control may be relevant from a theoretical/philosophical perspective, but most users probably use it as a permanent opt-out/opt-in control, instead of toggling.*”<sup>264</sup> Ms. Jia Liu responded that this was “*True for WAA.*”<sup>265</sup> Ms. Liu went on to indicate that [REDACTED]<sup>266</sup> Later in the same email chain, Mr. Bob Cui noted that, by his analysis of [REDACTED]<sup>267</sup>

159. The next step in determining the number of Class Member Devices is the adjustment from class members to the corresponding number of mobile devices. In order to derive the corresponding number of mobile devices and reflect the fact that users can have more than one mobile device, I multiplied the estimated number of class members by age group by the average number of mobile devices per person. For purposes of this adjustment, I conservatively assumed one (1) mobile device per class member aged ten to 17 and 1.86 mobile devices per adult class member as indicated in the Keegan survey results and as calculated on Schedule 12.2. As detailed on Schedule 10.1 and summarized in the figure below, the application of these device counts to the estimated number of class members yields approximately [REDACTED] Class Member Devices through December 2022:

<sup>261</sup> “Spotlight on Consumer App Usage” per App Annie at [http://files.appannie.com.s3.amazonaws.com/reports/1705\\_Report\\_Consumer\\_App\\_Usage\\_EN.pdf](http://files.appannie.com.s3.amazonaws.com/reports/1705_Report_Consumer_App_Usage_EN.pdf) (accessed February 10, 2023).

<sup>262</sup> GOOG-RDGZ-00060716-804 at 729.

<sup>263</sup> GOOG-RDGZ-00209874-876 at 875.

<sup>264</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>265</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>266</sup> GOOG-RDGZ-00042152.R-159.R at 153.R.

<sup>267</sup> GOOG-RDGZ-00042152.R-159.R at 152.R.

**Figure 49**  
**Class Member Devices through December 2022**<sup>268</sup>

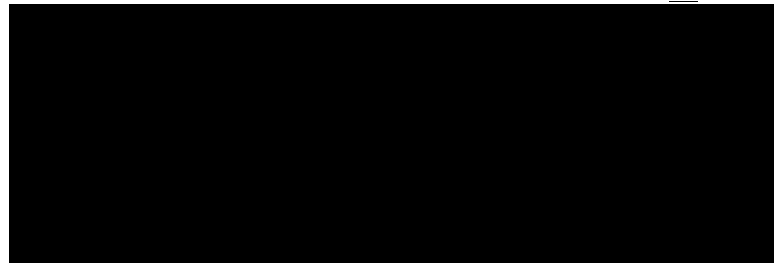


### **8.3. Conclusion Regarding Actual Damages**

160. In my opinion, the most probative indicator of the harm to WAA/sWAA-Off users from Google's collection, saving, and/or use WAA/sWAA-Off Data, and the value of that WAA/sWAA Off Data, is derived from the monthly compensation structure for participants in the Ipsos Screenwise Panel. More specifically, it is my opinion that the baseline payment to Screenwise Panel participants of \$3 per month for using a Screenwise meter app on a single mobile device represents a conservative indicator of the monthly payment necessary for an individual to knowingly surrender the choice to keep their app activity private and allow Google to track all app activity data, regardless of that individual's WAA or sWAA settings.
161. While the Screenwise compensation structure applies this \$3 payment per device per month, it is my opinion that actual damages through December 2022 can be conservatively measured by applying this \$3 payment on a one-time basis to the number of Class Member Devices, where a single Class Member Device represents a mobile device (smartphone or tablet) used with WAA/sWAA off at least once during the Class Period through December 2022. My calculations in this regard are detailed in the Schedule 10.1 and summarized in the figure below:

**Figure 50**

<sup>269</sup>



## **9. APPORTIONING MONETARY RELIEF TO THE CLASSES AND CLASS MEMBERS**

162. All of the calculations discussed in this report and detailed in the corresponding schedules can be readily apportioned across the two Classes and among Class members. If required and relevant, allocations for Class members in California could also be performed based on publicly available data such as the population of California as a percentage of the total U.S. population.

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<sup>268</sup> Schedule 10.1.

<sup>269</sup> Schedule 10.1.



163. My analyses of the monetary relief that can be awarded in this case can be readily used as common proof in part because they can be adjusted to calculate and assess unjust enrichment, actual damages, and nominal damages for different periods of time and subclass(es), depending on rulings from the Court and findings by a jury.

### 9.1. Apportioning Monetary Relief Across Classes

164. I have determined that my analyses of Google's unjust enrichment attributable to the alleged wrongful conduct and actual damages could be allocated across Classes as a function of the available data regarding the U.S. market share of Android (*i.e.*, Class 1) and Non-Android (*i.e.*, Class 2) operating systems in mobile devices and the share of Class 1 and Class 2 members that are typically "signed-in" to their Google accounts. More specifically, the available data regarding [REDACTED] (e.g., 51% and 49%, respectively, as indicated in the Keegan survey results)<sup>272</sup> can be combined to calculate class-specific apportionment factors. I provide a framework to calculate these class-specific apportionment factors on Schedule 1.5, and I provide example calculations showing my application of these apportionment factors to my analyses of Google's unjust enrichment on Schedules 1.3 and 1.4.

165. Alternatively, my analyses of Google's unjust enrichment attributable to the alleged wrongful conduct and actual damages could also be allocated across Classes as a function of the available data regarding the U.S. market share of Android (*i.e.*, Class 1) and Non-Android (*i.e.*, Class 2) operating systems in mobile devices, without further adjustment for differences (or lack thereof) in "signed-in" rates across the Classes. Among other indications of market share, this apportionment could be performed using data from the Keegan survey results regarding the share of respondents that have Android and Non-Android operating systems on their primary device (*i.e.*, 51% and 49%, respectively).

### 9.2. Apportioning Monetary Relief Among Class Members

166. I have determined that my analyses of Google's unjust enrichment attributable to the alleged wrongful conduct and actual damages could also be readily allocated among Class members based on number of Class members or the number of sWAA-Off User Months, as discussed below.

#### 9.2.1. The Number of Class Members

167. As previously discussed in Section 8.2, I estimated the number of class members (individual users) during the Class Period through December 2022 based on Google dat [REDACTED]

<sup>270</sup> Schedule 15.1.

<sup>271</sup> The calculations set forth on Schedule 1.5 can be modified to reflect alternative Android sign-in rates if such information becomes available. The 100% sign-in rate used in this calculation is for demonstration purposes, but is consistent with my understanding that various Android features are unavailable if the user is not signed-in to his or her device. See, for example, "Can you use an Android device without a Google account" per <https://www.howtogeek.com/854837/can-you-use-an-android-phone-without-a-google-account/>.

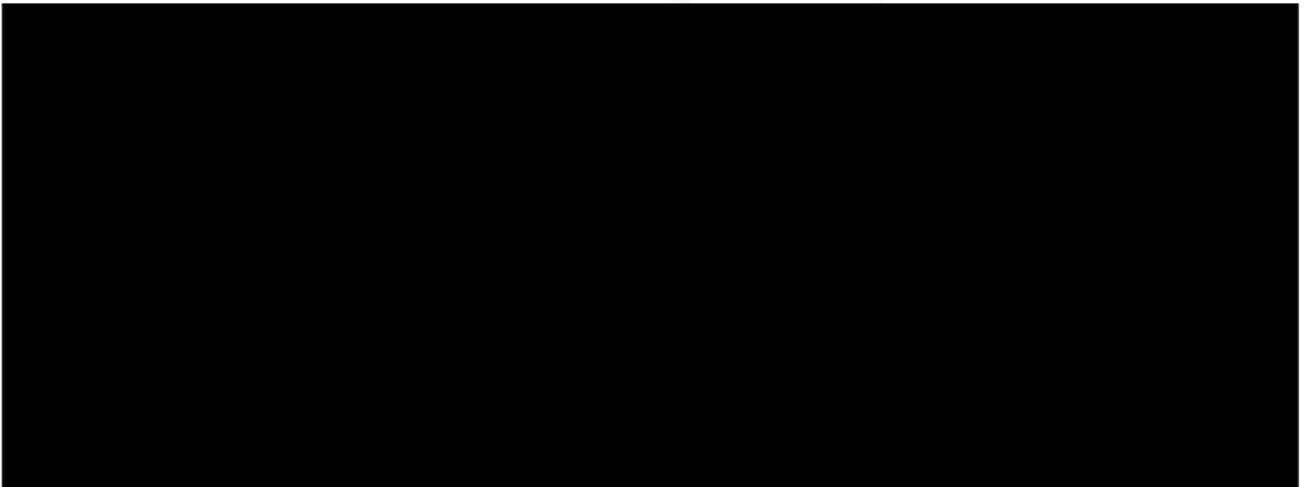
<sup>272</sup> Keegan Survey Results, Q8; Schedule 12.6.

27, 2020 and the portion of those accounts for which sWAA was turned off at any time during the same period,<sup>273</sup> as well as survey evidence and publicly available data regarding:

- the U.S. population by age group;
- the share of U.S. minors and adults that use the internet;
- the share of U.S. minors and adults that use smartphones; and,
- the share of smartphone users that have at least one Gmail account.

168. My calculations in this regard are detailed in Schedules 10.2 and 10.3 and summarized in the figure below.

**Figure 51**  
**Estimated Class Members Through December 31, 2022<sup>274</sup>**



169. Notably, this total number of estimated class members could be allocated across Classes based on the available data regarding the U.S. market share of Android (*i.e.*, Class 1) and Non-Android (*i.e.*, Class 2) operating systems in mobile devices. Among other indications of market share, this apportionment could be performed using data from the Keegan survey results regarding the share of respondents that have Android and Non-Android operating system on their primary device (*i.e.*, 51% and 49%, respectively).

#### **9.2.2. The Number of sWAA-Off User Months**

170. I also estimated the number of sWAA-Off User Months during the period July 2016 through December 2022, where a single sWAA-Off User Month represents a month in which an individual used a smartphone or tablet with sWAA off in the U.S. My analysis in this regard was based on the previously discussed Google document that represents the number of Google accounts that were “Created,” “Active,” and “Created or Active” with WAA and sWAA enabled in the U.S. for each month during the period May 2016 through October 2022 as well as data from the Keegan survey results regarding the number of Gmail accounts used by survey respondents with at least

<sup>273</sup> Schedule 12.7. See also GOOG-RDGZ-00187010 at tab “SWAA”.

<sup>274</sup> Schedules 10.2 and 10.3.



one Gmail account and the rate of smartphone use.<sup>275</sup> As discussed below and detailed in the attached schedules, I used this information to determine the number of sWAA-Off User Months during the period July 2016 through December 2022.

171. As an initial step of this analysis, and in the absence of Google account data for November and December 2022, I hold constant the October 2022 account data for November and December 2022. In my opinion, this assumption is [REDACTED] in light of the fact that [REDACTED] basis through October 2022.<sup>276</sup> To the resulting base of active sWAA-Off accounts by month during the period July 2016 through December 2022, I then performed [REDACTED]

172. [REDACTED] as indicated by the Keegan survey results. As calculated on Schedule 12.1, this survey data indicates that survey respondents with at least one Gmail account have, on an average, approximately 1.77 Gmail accounts.<sup>277</sup> As detailed on Schedule 11.1 and summarized in the figure below, this adjustment yields approximately [REDACTED] sWAA-Off User Months Before Adjustment for Mobile Device Use during the period July 2016 through December 2022:

**Figure 52**  
**sWAA-Off User Months Before Adjustment for Mobile Device Use:**  
**July 2016 through December 2022<sup>278</sup>**

173. Next, and in order to reflect the fact that some sWAA-Off users may not use mobile devices, I [REDACTED] as indicated by the Keegan survey results (*i.e.*, approximately 96% of respondents).<sup>279</sup> As detailed on Schedule 11.1 and summarized in the figure below, this adjustment yields approximately [REDACTED] during the period July 2016 through December 2022:

<sup>275</sup> GOOG-RDGZ-00204475, tab “Sheet1.” This document indicates that the data excludes “[REDACTED]” (*i.e.*, enterprise account holders), “Googlers” (*i.e.*, Google personnel), and “supervised” accounts. I also understand that “Active Accounts” refers to accounts that were active in the 28-day period before the month start date of a given measurement period. Deposition of Christopher Ruemmler, September 9, 2022, p. 181.

<sup>276</sup> Schedule 13.2; GOOG-RDGZ-00204475, tab “Sheet1.”

<sup>277</sup> Keegan Survey Results, Q12; Schedule 12.1.

<sup>278</sup> Schedule 11.1.

<sup>279</sup> Keegan Survey Results, Q7; Schedule 12.5.

**Figure 53**  
**sWAA-Off User Months:**  
**July 2016 through December 2022**<sup>280</sup>



174. The dollar value resulting from the division of my analyses of Google's unjust enrichment attributable to the alleged wrongful conduct or actual damages by the above sWAA-Off User Months could then be distributed to Class members in the claims administration process as a function of the number of sWAA-Off User Months deemed attributable to each Class member.

**10. SIGNATURE**

Respectfully,



Michael J. Lasinski

February 20, 2023

Date

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<sup>280</sup> Schedule 11.1.

# **Appendix A**





**MICHAEL J. LASINSKI**  
**CURRICULUM VITAE**

February 2023

Michael J. Lasinski is a senior managing director at Ankura Consulting Group where he heads the intellectual property (IP) group. Previously, he was a founding member of 284 Partners, LLC, a professional services firm focused on IP valuation, litigation consulting, IP strategy, and transactional services. Over the past twenty years, Mr. Lasinski has consulted on hundreds of engagements pertaining to IP-centric transactions, IP valuations, and IP damages analyses.

Mr. Lasinski is a recognized expert on financial aspects of intellectual property. He is *President-Elect of the Licensing Executives Society International (LESI)*, an association of over thirty national and regional member societies, and he is a *Past-President of the Licensing Executives Society USA & Canada (LES)*. Mr. Lasinski was also named one of the *World's 300 Leading IP Strategists* by Intellectual Asset Management. He is a past *Division Chair for the Intellectual Property Section of the American Bar Association*. He is a former *Chair of the Valuation and Taxation Committee for LES* and a former *Vice Chair of the Intellectual Property Owners' Valuation and Taxation Committee*. Mr. Lasinski is a Certified Public Accountant and an active member of the American Institute of Certified Public Accountants (AICPA) and the Illinois CPA Society. He is Certified in Financial Forensics by the AICPA and is a Certified Licensing Professional as initiated by the LES.

Mr. Lasinski has been retained and has testified as an expert in federal, ITC, state, tax and arbitration proceedings. Mr. Lasinski was retained by Boeing as the sole agent for licensing its technology into the automotive sector. He was instrumental in advising creditors and other interested parties on IP and financial issues related to the sale of Nortel's patent portfolio for more than \$4.5 billion. Mr. Lasinski's consulting experience includes a broad cross-section of industries, including the advertising, automotive, chemicals, computer hardware & software, consumer products, e-commerce, food & beverage, Internet, healthcare, life sciences, medical devices & related products, semiconductors, telecommunications, and wireless communications.

Mr. Lasinski has helped clients strategically manage their IP by creating global corporate organizations designed to maximize the current and future value of their intellectual property. His experience includes acquisitions, divestitures, mergers, joint ventures and bankruptcy. He has been a financial advisor to creditor committees, private equity companies, venture capitalists and Fortune 500 companies on numerous occasions. Mr. Lasinski was selected to be one of the developers/reviewers of the American Society of Appraisers Advanced Valuation Courses. He has lectured on intellectual property valuation for university business schools, law schools, the USPTO and other regulatory agencies.

Prior to focusing on IP, Mr. Lasinski was an automotive engineer and OEM program manager. Mr. Lasinski developed software for remote keyless entry and anti-theft systems. He was also responsible for airbag diagnostics, in-vehicle phone systems and other products.




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**PROFESSIONAL  
EXPERIENCE**

Senior Managing Director, Ankura Consulting Group, Dec. 2019 – Present

Managing Director & CEO, 284 Partners, 2010 – Dec. 2019

Managing Director, Capstone, 2009 – 2010

Managing Director, Ocean Tomo, 2006 – 2009

Executive Director, Center for Applied Innovation, 2005 – 2006

Vice President, Charles River Associates, 2004 – 2005

Managing Director, InteCap (now Charles River Associates), 1999 – 2004

Associate, IPC Group (now Charles River Associates), 1995 – 1999

Staff Accountant, Coopers & Lybrand (now PriceWaterhouseCoopers), 1994 – 1995

Program Manager, Ford Motor Company, 1989 – 1993

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**EDUCATION /  
LICENSES /  
PROFESSIONAL  
ASSOCIATIONS**

M.B.A., Finance and Accounting, The University of Michigan, with High Distinction

B.S.E.E., Electrical Engineering, The University of Michigan, Summa Cum Laude

Licensed CPA (State of Illinois)

American Institute of Certified Public Accountants

Illinois CPA Society

Certified in Financial Forensics (CFF)

Licensing Executives Society International, President-Elect

Licensing Executives Society USA & Canada, Past President (former Valuation and Taxation Committee Chair)

Certified Licensing Professional (CLP)

Intellectual Property Owners Organization, Founder and Former Vice Chair, Valuation and Taxation Committee

<b>EDUCATION / LICENSES / PROFESSIONAL ASSOCIATIONS</b>	American Bar Association, Former-Chair of the Intellectual Property Section Division, Former-Chair of the Economics of the Profession Committee
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<b>UNIVERSITY INSTRUCTION &amp; IP VALUATION COURSE INSTRUCTION</b>	<p>Franklin Pierce Law Center</p> <p>John Marshall Law School</p> <p>University of Notre Dame, Mendoza College of Business</p> <p>University of Michigan, Ross School of Business</p> <p>US Joint Committee on Taxation, Ad-hoc group for IP valuation</p> <p>US Chamber &amp; USPTO to Chinese State Intellectual Property Office</p> <p>Multiple courses for:</p> <ul style="list-style-type: none"> <li>▪ Licensing Executives Society</li> <li>▪ American Bar Association</li> <li>▪ Intellectual Property Owners Organization</li> <li>▪ Industrial Research Institute</li> <li>▪ Many other IP Symposiums</li> </ul>
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<b>PUBLICATIONS</b>	<p><b>Article:</b> “Assessing the reasonableness of 5G headline royalty rates,” IAM (Law Business Research), September 8, 2021, with Philip W. Kline and Alejandra Loaiza-Delgado</p>
---------------------	---

**Book Chapter:** The New Role of Intellectual Property in Commercial Transactions, Cumulative Supplement, 1997, with Andrew W. Carter. “Financial Accounting and Reporting Considerations, Supplementary Material”

**Article:** “IP Survey Finds ‘Gap’ in Information,” les Nouvelles, Volume XXXIII No. 3, September 1998, with Daniel M. McGavock.

**Book Chapter:** Intellectual Property in the Global Marketplace, Volume 1, Valuation, Protection, Exploitation, and Electronic Commerce, 2nd Edition, Melvin Simensky, Lanning Bryer and Neil J. Wilkof, September 1999, with Andrew W. Carter. Chapter 8: “Financial Accounting and Reporting Considerations”

**PUBLICATIONS**

**Book Chapter:** Intellectual Property Assets in Mergers and Acquisitions, Lanning Bryer & Melvin Simensky, December 2001. Chapter 4: “Valuation of Intellectual Property Assets in Mergers and Acquisitions”

**Article:** “Investing in IP,” European CEO, November-December 2007.

**Article:** “Patent Attorney Malpractice: What’s the Value of Nonexistent Patent Rights?” Landslide (a publication of the American Bar Association Section of Intellectual Property Law), January/February 2010, with Richard Conroy. Franklin Pierce Law Center

**Article:** “A look at licensing in the year ahead” IAM Licensing 250 2010: The World’s Leading Patent & Technology Licensing Lawyers (a publication of Intellectual Asset Magazine – The IP Media Group), December 2010

**Article:** “Introduction: A brief perspective on IP valuation” IP Value 2011 – An International Guide for the Boardroom (a publication of Intellectual Asset Magazine – The IP Media Group), January 2011

**Article:** “25%ルール」を否定したUniloc判決の影響～会計・訴訟対応の視点から～” (Article about *Uniloc* published in Japanese) Nikkei IP Awareness, January 20, 2011, with Kevin Arst

**Article:** “Licensing in 2011 and Beyond: Observations on Intellectual Property Quality, Value and Sale” WIPR, World Intellectual Property Review – Digest 2010, February 2011

**EXPERT  
TESTIMONY**

***Chasom Brown, William Byatt, Jeremy Davis, Christopher Castillo, and Monique Trujillo, Individually and on Behalf of All Other Similarly Situated v. Google LLC***

Case No.: 4:20-cv-03664-YGR-SVK

Industry: Internet Data Privacy

Venue: United States District Court for the Northern District of California

***Moskowitz Family LLC v. Globus Medical, Inc.***

Case No.: 2:20-cv-03271-MSG

Industry: Medical Devices

Venue: United States District Court for the Eastern District of Pennsylvania

**EXPERT  
TESTIMONY**

***Mediatek, Inc. and MediaTek USA Inc. v. NXP Semiconductors N.V. et al.***

Investigation No.: 337-TA-1272

Industry: Semiconductors

Venue: United States International Trade Commission

***Confidential Arbitration on behalf of HTC Corporation***

ICC Case No.: 24176/MK

Industry: Telecommunications

Venue: International Chamber of Commerce, International Court of Arbitration

***GE Transportation Parts, LLC v. Central Railway Manufacturing, LLC***

Case No.: 1:19-cv-04826-AJN

Industry: Locomotive

Venue: Southern District of New York

***In the Matter of Certain UMTS and LTE Cellular Communication Modules and Products Containing the Same (Quectel and Telit)***

Investigation No. 337-TA-1240

Industry: Communication Modules

Venue: United States International Trade Commission

***Syngenta Crop Protection, LLC v. Atticus, LLC***

Case No. 5:19-cv-00509-D

Industry: Agrichemical, Fungicides

Venue: United States District Court, Eastern District of North Carolina

***Commonwealth of Kentucky v. Stars Interactive Holdings (ION) LTD, et al.***

Civil Action No. 10-CI-00505

Industry: Internet Gaming

Venue: Commonwealth of Kentucky, Franklin Circuit Court, Divisions II

***Monarch Networking Solutions LLC v. Cisco Systems, Inc.***

Case No. 2:20-cv-00015

Industry: Network Routing

Venue: United States District Court, Eastern District of Texas

***Certain Smart Thermostats, Smart HVAC Systems, and Components Thereof***

Inv. No. 337-TA-1185

Industry: HVAC

Venue: United States International Trade Commission



**EXPERT  
TESTIMONY**

***Confidential Arbitration on behalf of Syngenta Crop Protection AG***

AAA Case Nos. 01-19-0002-4192 and 01-19-0002-4208

Industry: Herbicides

Venue: American Arbitration Association

***Eaton Steel Bar Company, Inc. v. Plex Systems, Inc.***

Case No. 2019-173411-CB

Industry: Business Software

Venue: State of Michigan, Oakland County Circuit Court

***Bell Northern Research, LLC v. ZTE Corporation et al.***

Case No. 3:18-CV-01786

Industry: Consumer Electronics

Venue: United States District Court, Southern District of California

***Confidential Arbitration on behalf of Syngenta Crop Protection AG***

CPR File No. G-19-24-G

Industry: Insecticides

Venue: CPR Institute for Dispute Resolution

***Fundamental Innovation Systems International LLC v. ZTE Corporation et al.***

Case No. 3:17-cv-01827

Industry: Consumer Electronics

Venue: United States District Court, Northern District of Texas

***Looksmart Group, Inc. v. Microsoft Corporation***

Case No. 3:17-cv-4709

Industry: Search Engines

Venue: United States District Court, Northern District of California

***Louisiana-Pacific Corporation v. James Hardie Building Products, Inc. v. The Kruse Brothers, Inc.***

Case No. 3:18-cv-00447

Industry: Manufactured Siding

Venue: United States District Court, Middle District of Tennessee

***In Re: Qualcomm Antitrust Litigation (Merits)***

Case No. 5:17-cv-0773

Industry: Telecommunications

Venue: United States District Court, Northern District of California

**EXPERT  
TESTIMONY**

***Novartis Vaccines and Diagnostics, Inc., et al. v. Regeneron Pharmaceuticals, Inc.***

Case No. 18-cv-2434-DLC

Industry: Pharmaceuticals

Venue: United States District Court, Southern District of New York

***Intellectual Ventures II LLC v. Bitco General Insurance Corp. et al. and Great West Casualty Co.***

Case Nos. 6:18-cv-00298 and 6:18-cv-00299

Industry: Insurance

Venue: United States District Court, Eastern District of Texas

***Confidential Appeals Pre-Conference on behalf of the United States Internal Revenue Service***

Valuation Issue Related to Transfer Pricing Dispute

Venue: Internal Revenue Service Office of Appeals

***In the Matter of: Memory Modules and Components Thereof – SK hynix, Inc.***

Investigation No. 337-TA-1089

Industry: Semiconductor

Venue: United States International Trade Commission

***Federal Trade Commission v. Qualcomm Incorporated***

Case No. 5:17-cv-00220

Industry: Telecommunications

Venue: United States District Court, Northern District of California

***In Re: Qualcomm Antitrust Litigation (Class Certification)***

Case No. 5:17-cv-0773

Industry: Telecommunications

Venue: United States District Court, Northern District of California

***Huawei Technologies Co., Ltd., et al. v. Samsung Electronics Co., Ltd., et al.***

Case No. 3:16-cv-02787

Industry: Telecommunications

Venue: United States District Court, Northern District of California

***Daniel Grellner v. Rodney D. Raabe et al.***

Case No. 2:15-cv-00189

Industry: Medical Implants

Venue: United States District Court, Eastern District of Washington

**EXPERT  
TESTIMONY**

***The Coca-Cola Company & Subsidiaries v. Commissioner of Internal Revenue***

Tax Court Docket No. 31183-15

Industry: Food & Beverage

Venue: United States Tax Court

***Evolved Wireless, LLC v. ZTE Corporation et al.***

Case No. 1:15-cv-00546-SLR-SRF

Industry: Telecommunications

Venue: United States District Court, District Court of Delaware

***Implicit, LLC v. Trend Micro, Inc. et al.***

Case No. 6:16-cv-00080-JRG

Industry: Network Security

Venue: United States District Court, Eastern District of Texas

***In the Matter of: Certain Memory Modules and Components Thereof, and  
Products Containing the Same – SK hynix, Inc.***

Investigation No.: 337-TA-1023

Industry: Semiconductor

Venue: United States International Trade Commission

***Unwired Planet International Ltd., et al. v. Huawei Technologies Co. Ltd., et al.***

Claim No. HP-2014-000005

Industry: Telecommunications

Venue: High Court of Justice of England and Wales, Chancery Division, Patents  
Court

***Green Mountain Glass, LLC and Culchrome, LLC v. Saint-Gobain Containers,  
Inc. d/b/a Verallia North America***

Case No. 1:14-cv-00392

Industry: Glass Recycling

Venue: United States District Court, District Court of Delaware

***Quest Licensing Corporation v. Bloomberg LP, et al.***

Case No. 1:14-cv-00561

Industry: Financial Data Services

Venue: United States District Court, District Court of Delaware

***Jezeign Licensing, LLC v. Skechers U.S.A., Inc.***

Case No. 8:16-cv-01193

Industry: Fashion and Retail

Venue: United States District Court, District of Maryland

**EXPERT  
TESTIMONY**

***Avago Technologies U.S. Inc. et al. v. IPtronics Inc., et al.***

Case No. 5:10-cv-02863

Industry: Fiber Optic Data Communications

Venue: United States District Court, Northern District of California

***Confidential Arbitration on behalf of Huawei Technologies Co. Ltd.***

ICDR Case Number: 01-14-0002-2610

Industry: Telecommunications

Venue: International Centre for Dispute Resolution

***Eaton Corporation and Subsidiaries v. Commissioner of Internal Revenue***

Tax Court Docket No. 5576-12

Industry: Industrial and Residential Electrical Apparatus

Venue: United States Tax Court

***Confidential Arbitration on behalf of Nokia Corporation***

Case Number: 19602/AGF

Industry: Telecommunications

Venue: International Chamber of Commerce, International Court of Arbitration

***CardioNet, Inc. v. The ScottCare Corp., et al.***

Case No. 2:12-cv-02516

Industry: Medical Devices

Venue: United States District Court, Eastern District of Pennsylvania

***Mobile Telecommunications Technologies, LLC v. United Parcel Service, Inc.***

Case No. 1:12-cv-03222-AT

Industry: Telecommunications / Shipping

Venue: United States District Court, Northern District of Georgia

***Numatics, Inc. v. Balluff, Inc. and H.H. Barnum Company***

Case No. 2:13-cv-11049-DML-MKM

Industry: Industrial Automation Equipment

Venue: United States District Court, Eastern District of Michigan

***Amazon.com, Inc. & Subsidiaries v. Commissioner of Internal Revenue***

Tax Court Docket No. 31197-12

Industry: E-Commerce

Venue: United States Tax Court

**EXPERT  
TESTIMONY**

***In the Matter of: Certain Wireless Devices with 3G and/or 4G Capabilities and Components Thereof – Client ZTE Corporation***

Investigation No. 337-TA-868

Industry: Consumer Electronics

Venue: United States International Trade Commission

***NeoMedia, Inc. v. Scanbuy, Inc.***

Case No. 13 117 01730 12

Industry: Consumer Electronics

Venue: American Arbitration Association, New York

***In the Matter of: Certain Wireless Devices with 3G Capabilities and Components Thereof – Client ZTE Corporation***

Investigation No. 337-TA-800

Industry: Consumer Electronics

Venue: United States International Trade Commission

***Multimedia Patent Trust v. Canon, Inc., Canon U.S.A., et al.***

Case No. 10-cv-02618

Industry: Consumer Electronics

Venue: United States District Court, Southern District of California

***Realtime Data d/b/a/ IXO v. MetroPCS Texas, LLC, et al.***

Case No. 1:12-cv-10204

Industry: Telecommunications

Venue: United States District Court, Eastern District of Texas

***Zecotek Imaging Systems Pte. Ltd. and Beijing Opt-Electronics Technology Co., v. Saint-Gobain Ceramics & Plastics, Inc. et al.***

Case No. 5:12-cv-01533

Industry: Medical Device Manufacturing

Venue: United States District Court, Northern District of Ohio

***Warrior Sports, Inc. v. Dickinson Wright, PLLC, et al.***

Case No. 09-cv-12102

Industry: Sports Equipment

Venue: United States District Court, Eastern District of Michigan

***In Re: Eastman Kodak Company et al.***

Case No. 1:12-cv-10204

Industry: Digital Imaging

Venue: United States Bankruptcy Court, Southern District of New York





**EXPERT  
TESTIMONY**

***Procter & Gamble Company v. United States of America***

Case No. 1:08-cv-00608

Industry: Pharmaceutical & Consumer Products

Venue: United States District Court, Southern District of Ohio

***Pittsburgh Standard Spine Co. v. Lanx, Inc.***

Case No. 1:09-cv-01062

Industry: Medical Devices

Venue: United States District Court, District of Colorado

***MacroGenics, Inc. v. Centocor, Inc. and Ortho-McNeil Pharmaceutical, Inc.***

CPR File No. G-09-08

Industry: Pharmaceutical

Venue: American Arbitration Association, New York

***MiraVista Diagnostics et al. v. Indiana University R&D et al.***

Case No. 49D04-0603-PL-009827

Industry: Medical Devices

Venue: Indiana State Court

***Vaxiion Therapeutics, Inc. v. Foley & Lardner, LLP et al.***

Case No. 3:07-cv-00280

Industry: Pharmaceutical & Medical products

Venue: United States District Court, Southern District of California

***Schütz Container Systems, Inc. v. Mauser Corp. and National Container Group, LLC***

Case No. 1:09-cv-03609

Industry: Shipping Containers

Venue: United States District Court, Northern District of Georgia

***In re: Composite Technologies Corporation, et al. (Client Partners for Growth II, LP)***

Case No. 8:11-bk-15058

Industry: General Manufacturing

Venue: United States Bankruptcy Court, Central District of California

***Joseph Chernesky v. Ronald Epstein et al.***

Case No. 491041

Industry: Patent Monetization

Venue: Superior Court of California, County of San Mateo

**EXPERT  
TESTIMONY*****Service Employees International Union, CTW/CLC et al. v. SEIU United Healthcare Workers-West, et al.***

Case No. 3:09-cv-0404

Industry: Labor Union

Venue: United States District Court, Northern District of California

***Frank T. Shum v. Intel Corporation et al.***

Case No. 4:02-cv-03262

Industry: Telecommunications Equipment

Venue: United States District Court, Northern District of California

***DigaComm, LLC v. Vehicle Safety and Compliance, LLC et al.***

Case No. 08-338

Industry: Telecommunications Equipment

Venue: American Arbitration Association, Delaware

***Landmark Screens, LLC v. Pennie & Edmonds, et al.***

Case No. 74 194 Y 01059 60 DEAR

Industry: General Electronics

Venue: American Arbitration Association

***Simpliance, Inc., et al. v. WM. Bruce Davis, Esq.***

Case No. A0503866

Industry: Software

Venue: Hamilton County, Ohio Municipal Court

***Procter & Gamble Company, and Subsidiaries et al. v. United States of America***

Case No. 1:05-cv-00355

Industry: Consumer Products

Venue: United States District Court, Southern District of Ohio

***Tenneco Automotive Operating Company, Inc. v. Visteon Corporation***

Case No. 1:03-cv-01030

Industry: Automotive Components

Venue: United States District Court, District of Delaware

**PATENTS AND  
APPLICATIONS**

- 
- 7,885,897 Intellectual Property Trading Exchange and a Method for Trading Intellectual Property Rights
  - 7,987,142 Intellectual Property Trading Exchange



## **PATENTS AND APPLICATIONS**

- 8,180,711 Intellectual Property Trading Exchange
- 8,355,932 System and Method for Managing Intellectual Property Based Risks
- 8,554,687 Intellectual Property Trading Exchange and a Method for Trading Intellectual Property Rights
- Application 20090070150 Methods and Systems for Managing the Risks of Patent Coverage
- Application 20110295757 Intellectual Property Trading Exchange
- WO 2006113551 An Intellectual Property Trading Exchange and a Method for Trading Intellectual Property Rights
- WO 2012074668 Intellectual Property Trading Exchange
- WO 2011126616 Intellectual Property Trading Exchange

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## **CONTACT**

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 Ann Arbor, MI 48104

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 michael.lasinski@ankura.com

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# **Appendix B**



Rodriguez et al v. Google LLC et al.

**DOCUMENT INDEX**

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**Depositions with Exhibits:**

Deposition of Arne De Booi, February 7, 2023  
 Deposition of Greg Fair, October 3, 2022  
 Deposition of Steve Ganem, October 28, 2022  
 Deposition of Sam Heft-Luthy, February 8, 2023 (Rough)  
 Deposition of Belinda Langner, December 15, 2022  
 Deposition of Francis Ma, October 28, 2022

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Deposition of Eric Miraglia, October 25, 2022  
 Deposition of David Monsees, September 15, 2022  
 Deposition of Rahul Oak, November 18, 2022  
 Deposition of Christopher Ruemmler, September 9, 2022  
 Deposition of Daniel Stone, November 15, 2022 (Rough)  
 Deposition of Edward Weng, September 23, 2022  
 Deposition of Xinyu Ye, February 9, 2023 (Rough)

### Expert Analyses:

Keegan Survey Results

### Pleadings:

Fourth Amended Complaint, January 4, 2023  
 Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos 12, 16, &17), Supplemental Response to Interrogatory No 17  
 Defendant Google LLC's Supplemental Objections & Responses to Plaintiffs' Interrogatories, Set Seven (Nos 18-24), Supplemental Response to Interrogatory No 23  
 Google Response to RFA No 1

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 Alphabet Form 10-K for the fiscal year ended December 31, 2018  
 Alphabet Form 10-K for the fiscal year ended December 31, 2019  
 Alphabet Form 10-K for the fiscal year ended December 31, 2021  
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 Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021, Census Bureau  
 “Protecting the Privacy of Customers of Broadband and Other Telecommunications Services,” Federal Communications Commission, December 2, 2016

# Schedules

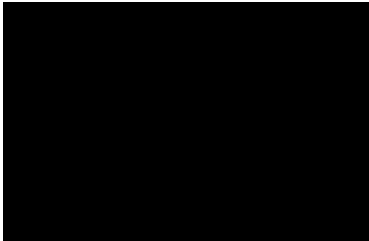


*Rodriguez et al v. Google LLC et al.*

**SUMMARY - UNJUST ENRICHMENT BY PRODUCT**

Schedule 1 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

	<u>Scenario One</u>	<u>Scenario Two</u>
App Promo		
AdMob		
Ad Manager		
Total		

**Note:**

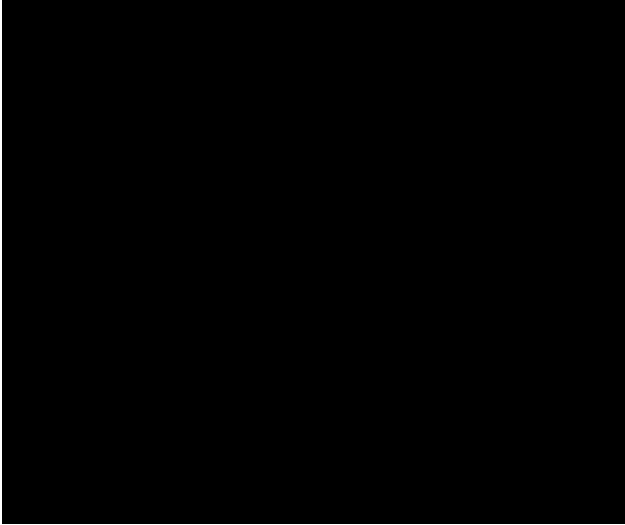
Schedule 1 2

*Rodriguez et al v. Google LLC et al.*

**SUMMARY - UNJUST ENRICHMENT SCENARIOS ONE AND TWO BY PRODUCT AND CLASS**

Schedule 1 2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 1 3

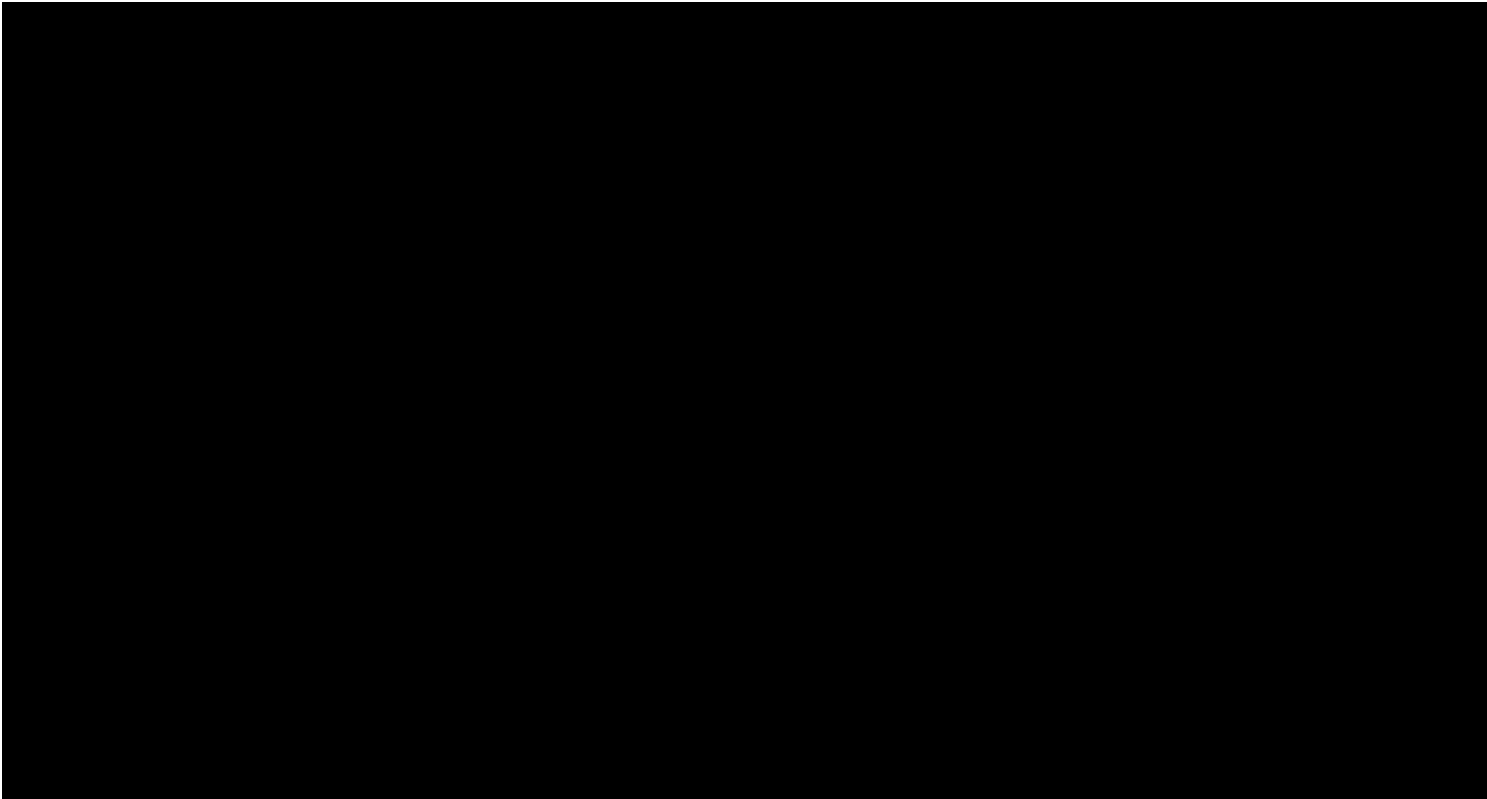
(2) Schedule 1 4

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**EXAMPLE APPORTIONMENT OF UNJUST ENRICHMENT TO CLASSES - SCENARIO ONE**

Schedule 1 3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 2 1

(2) Schedule 3 3

(3) Schedule 4 3

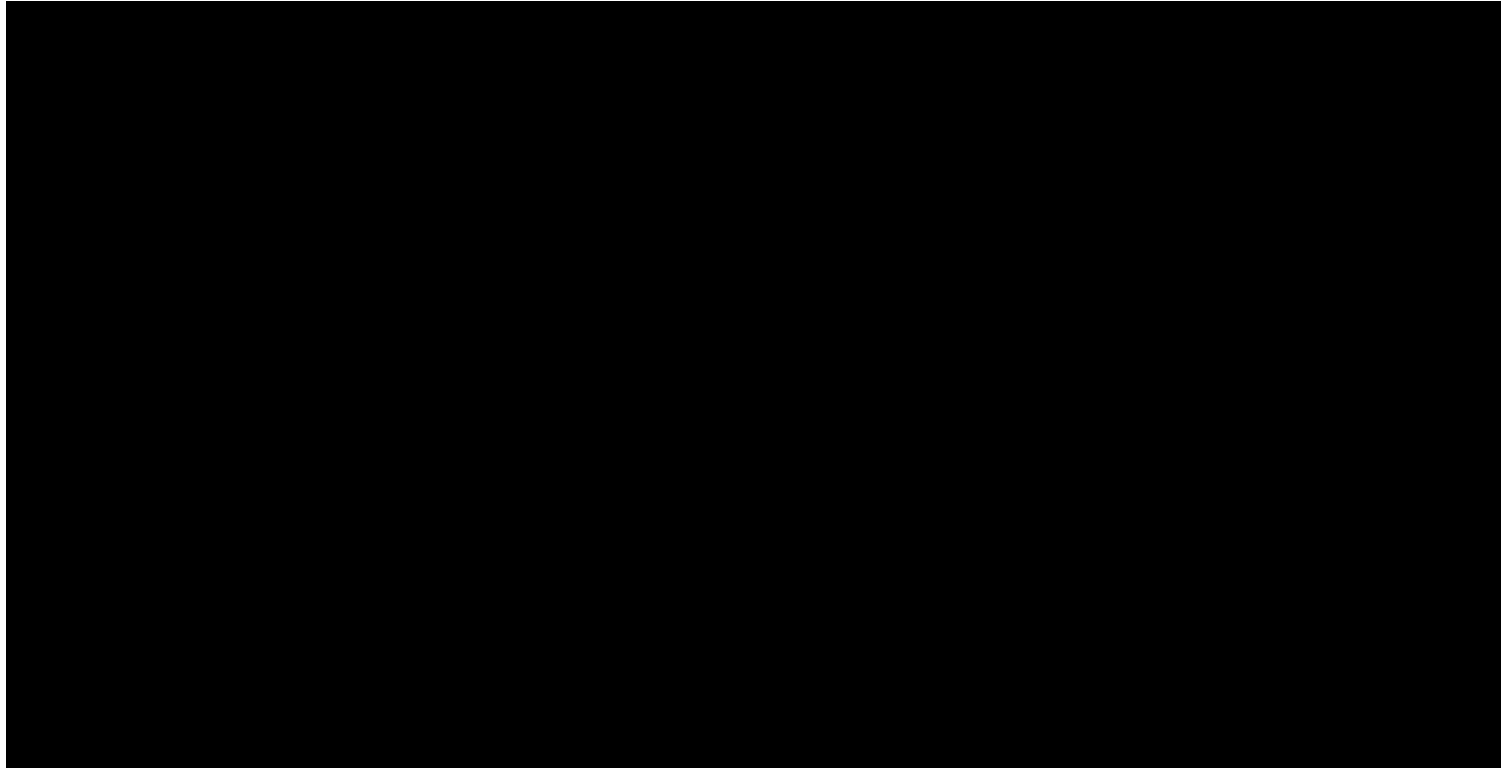
(4) Schedule 1 5

*Rodriguez et al v. Google LLC et al.*

**EXAMPLE APPORTIONMENT OF UNJUST ENRICHMENT TO CLASSES - SCENARIO TWO**

Schedule 1 4

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 2 1

(2) Schedule 3 1

(3) Schedule 4 1

(4) Schedule 1 5

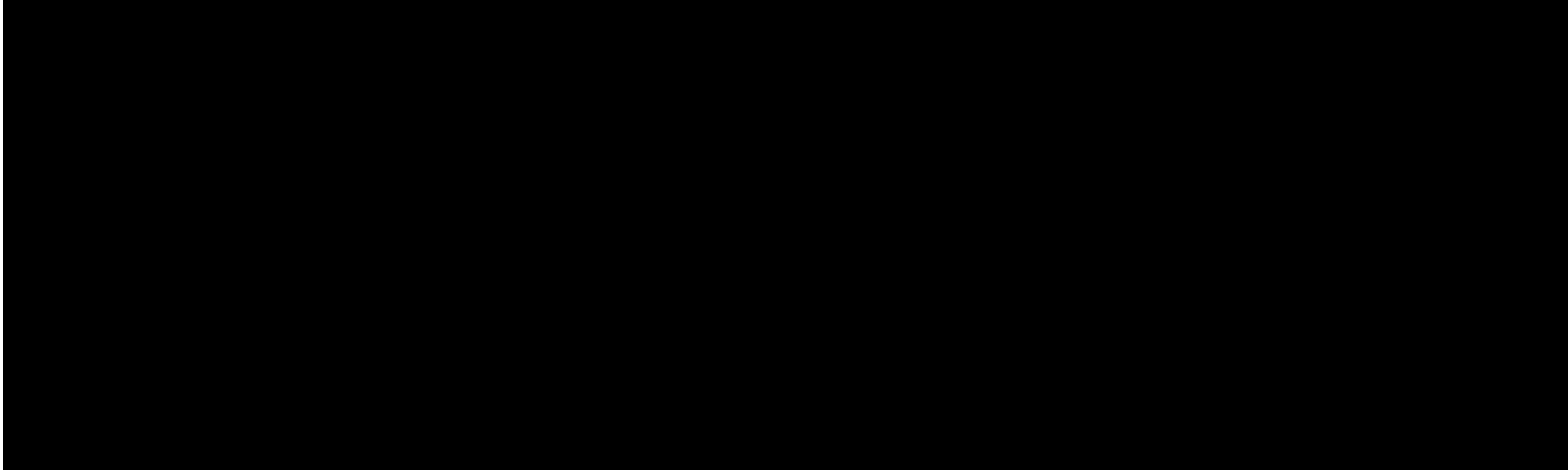


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**EXAMPLE CLASS-SPECIFIC APPORTIONMENT FACTORS**

Schedule 1 5

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 15 1

(2) Schedule 12 6

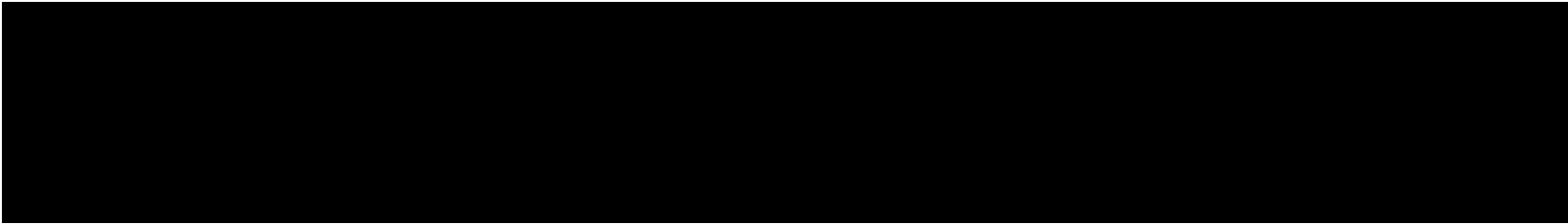


*Rodriguez et al v. Google LLC et al.*

**APP PROMO TOTAL UNJUST ENRICHMENT**

Schedule 2 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 2 2

(2) Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to ROG 17, pp. 15-16. Source represents that these revenue shares correspond to specific dates, as compared to annual averages.

*Rodriguez et al v. Google LLC et al.*

Schedule 2.2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

- (1) 2017-2020 per GOOG-RDGZ-00184247 2021 per GOOG-RDGZ-00185744
- (2) July 2016 through December 2016 per Schedule 7.2 2022 calculated by applying assumed year over year growth rate to 2021 value

(4) Schedule 15.1

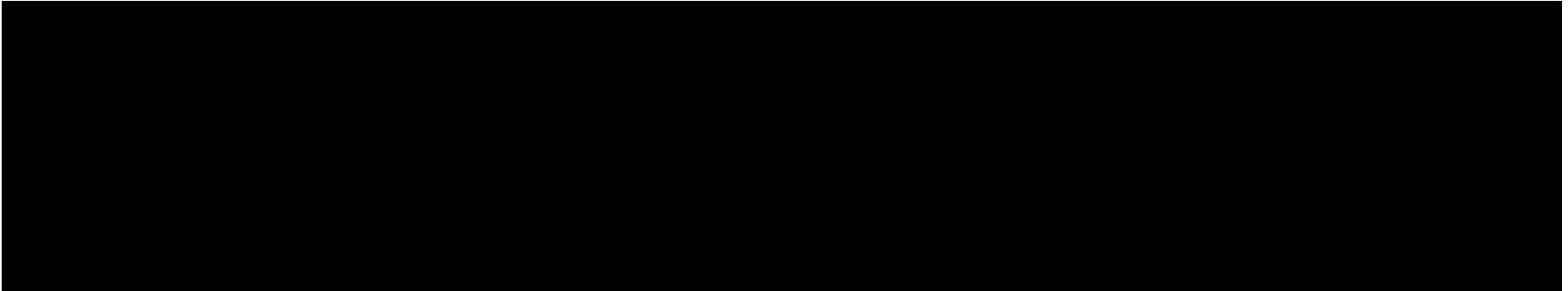
(5) Schedule 13.1

*Rodriguez et al v. Google LLC et al.*

**ADMOB TOTAL UNJUST ENRICHMENT - SCENARIO TWO**

Schedule 3 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 3 3

(2) Schedule 3 2

*Rodriguez et al v. Google LLC et al.*

Schedule 3.2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

- (1) Schedule 3.4.
- (2) Schedule 3.3.
- (3) Schedule 14.1. See also Report Section 7.2.2.



*Rodriguez et al v. Google LLC et al.*

Schedule 3 3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

(1) Schedule 3 4

(2) GOOG-RDGZ-00188469-491 at 475 Represented on source document as

*Rodriguez et al v. Google LLC et al.*

Schedule 3 4

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

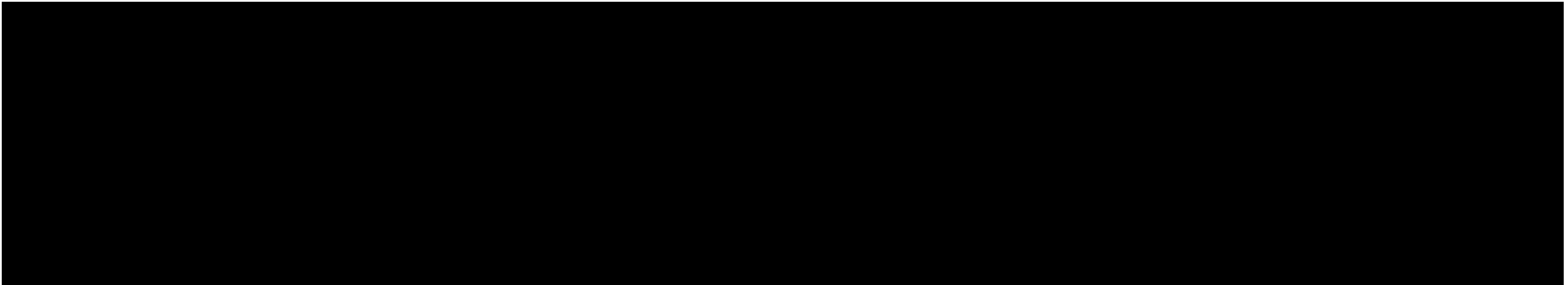
- (1) Schedule 6 1
- (2) Schedule 5 1
- (3) Schedule 15 1
- (4) Schedule 13 1

*Rodriguez et al v. Google LLC et al.*

**AD MANAGER TOTAL UNJUST ENRICHMENT - SCENARIO TWO**

Schedule 4 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 4 3

(2) Schedule 4 2

*Rodriguez et al v. Google LLC et al.*

Schedule 4.2

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Schedule 4.4.
- (2) Schedule 4.3.
- (3) Schedule 14.1. See also Report Section 7.2.3.

*Rodriguez et al v. Google LLC et al.*

Schedule 4 3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 4 4

(2) GOOG-RDGZ-00188469-491 at 475 Represented on source document as





*Rodriguez et al v. Google LLC et al.*

Schedule 4.4

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

**Notes:**

- (1) Schedule 5.2
- (2) Schedule 5.1
- (3) Schedule 15.1
- (4) Schedule 13.1

*Rodriguez et al v. Google LLC et al.*

Schedule 5 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

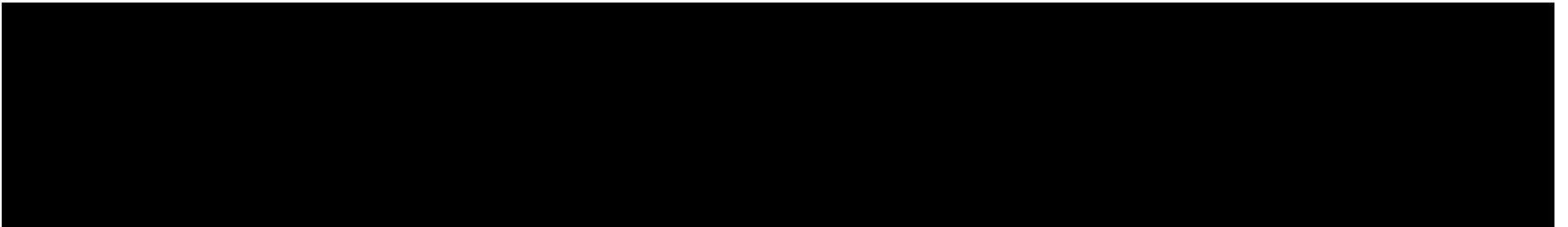
- (1) Schedule 7 1
- (2) Schedule 5 3

*Rodriguez et al v. Google LLC et al.*

[REDACTED] - JULY 2016 - DECEMBER 2022

Schedule 5 2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

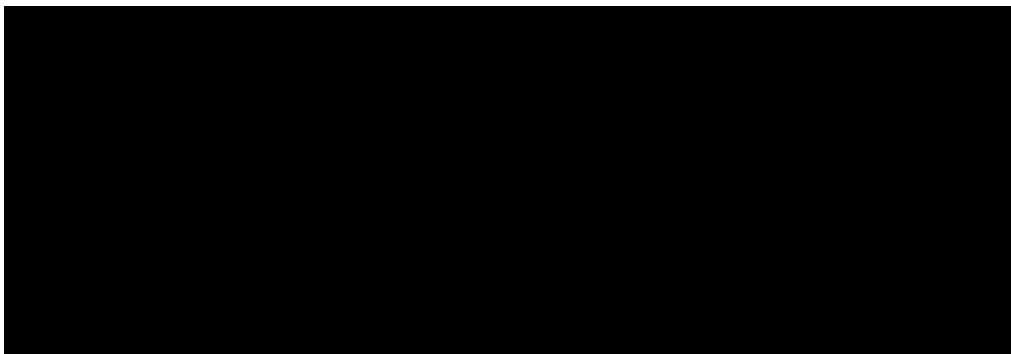
(1) Schedule 6 1

(2) Schedule 5 3

*Rodriguez et al v. Google LLC et al.*

Schedule 5.3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Note:**

(1) 2019 "Actual" per GOOG-RDGZ-00072319 at 328. Source only presents rounded values. I understand that "AdX" refers to Ad Exchange, a former Google offering that was combined with Ad Manager. See, for example, GOOG-RDGZ-00083725-748 at 730.

*Rodriguez et al v. Google LLC et al.*

Schedule 6 1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Revenues per Schedule 6 2
- (2) Revenues per Schedule 6 3
- (3) Revenues per Schedule 6 5
- (4) Revenues calculated by applying assumed year over year growth rate to 2021 value

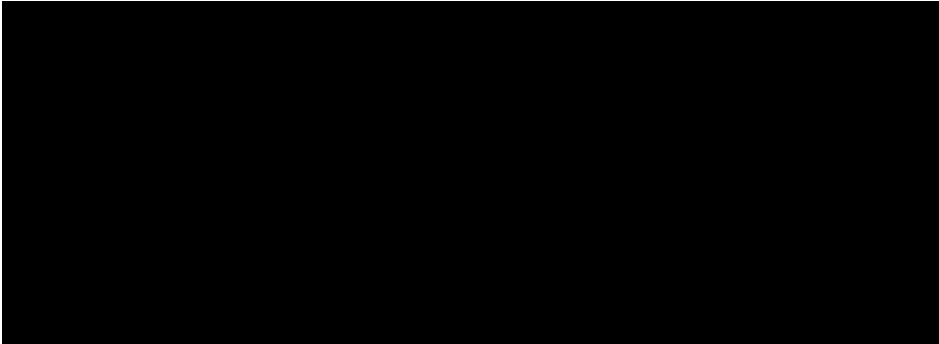


*Rodriguez et al v. Google LLC et al.*

[REDACTED] - JULY 2016 TO DECEMBER 2016

Schedule 6 2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

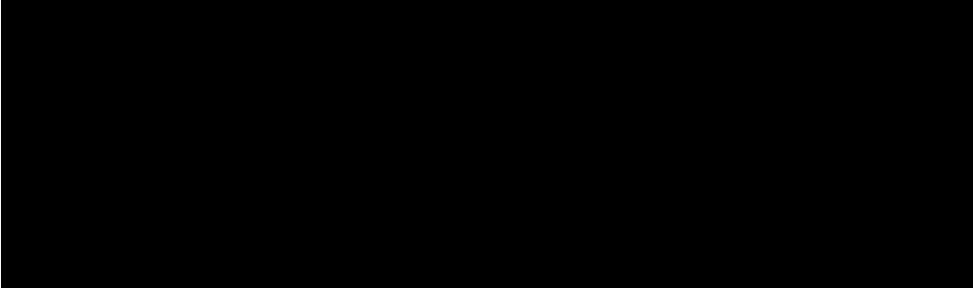
(1) Schedule 7 2

(2) Schedule 6 4

*Rodriguez et al v. Google LLC et al.*

[REDACTED] - 2017  
Schedule 6 3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

- (1) GOOG-RDGZ-00184247
- (2) Schedule 6 4

*Rodriguez et al v. Google LLC et al.*

Schedule 6 4

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

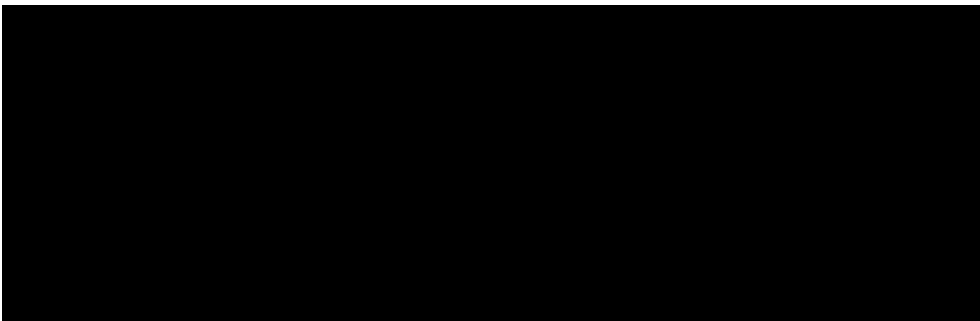
(1) 2018-2020 per GOOG-RDGZ-00184247 2021 per GOOG-RDGZ-00185744

(2) Schedule 6 5

*Rodriguez et al v. Google LLC et al.*

Schedule 6.5

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



**Notes:**

- (1) 2018-2020 per GOOG-RDGZ-00187666 2021 per GOOG-RDGZ-00187665 Sources present only rounded-values
- (2) Schedule 7.6 Estimated U.S. share of global App Promo revenue used as proxy for estimated U.S. share of global AdMob revenue

*Rodriguez et al v. Google LLC et al.*

Schedule 7.1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

**Notes:**

(1) 2016 per Schedule 7.2 2017-2020 per GOOG-RDGZ-00184247 2021 per GOOG-RDGZ-00185744 2022 calculated by applying assumed 2021 to 2022 year over year growth rate to 2021 value

(2) Schedule 8.1 2019 share held constant for years 2016 - 2018 2021 share held constant for 2022

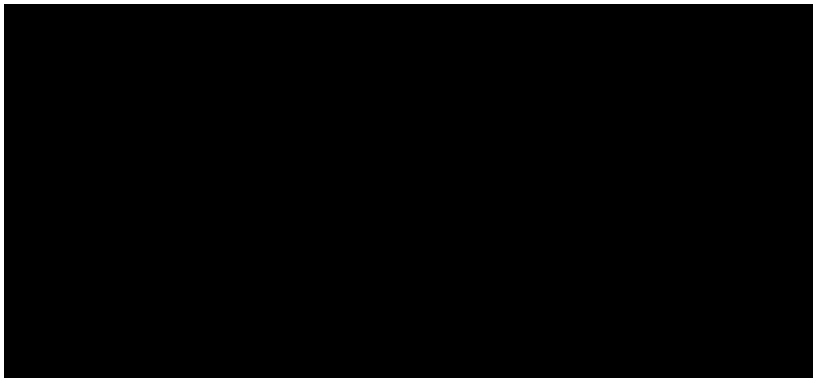


*Rodriguez et al v. Google LLC et al.*

[REDACTED] - JULY 2016 TO DECEMBER 2016

Schedule 7.2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) 2017 per GOOG-RDGZ-00184247

(2) Schedule 7.3 Conservatively selected highest indicated growth rate between same quarters (i.e., [REDACTED] % YoY growth, October 2016 to October 2017)

*Rodriguez et al v. Google LLC et al.*

2016 V. 2017

Schedule 7 3

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

**Notes:**

(1) Schedule 7 4

(2) GOOG-RDGZ-00067396-438 at 403 Source represents that annualized global App Promo revenue for 2019 was \$ Physical measurement of hard copy of source indicates a scale of approximately \$ per centimeter

Calculated as

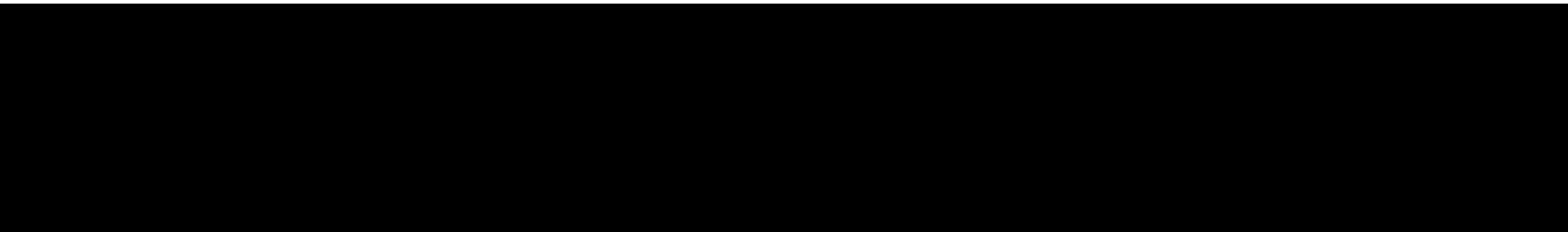
(3) Schedule 7 5

*Rodriguez et al v. Google LLC et al.*

AMERICAS PERCENTAGE OF [REDACTED]

Schedule 7 4

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Note:

GOOG-RDGZ-00067396-438 at 403 Length in centimeters as measured on hard copy of source

*Rodriguez et al v. Google LLC et al.*

**U.S. SHARE OF APP PROMO AMERICAS REVENUE: 2019**

Schedule 7 5

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 7 6

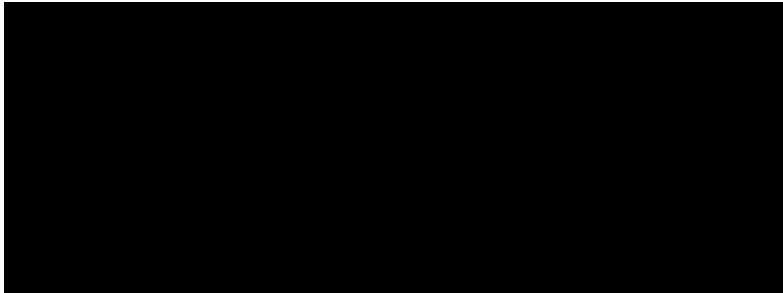
(2) GOOG-RDGZ-00067396-438 at 403

*Rodriguez et al v. Google LLC et al.*

**ESTIMATED U.S. SHARE OF GLOBAL APP PROMO REVENUE: 2019**

Schedule 7 6

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

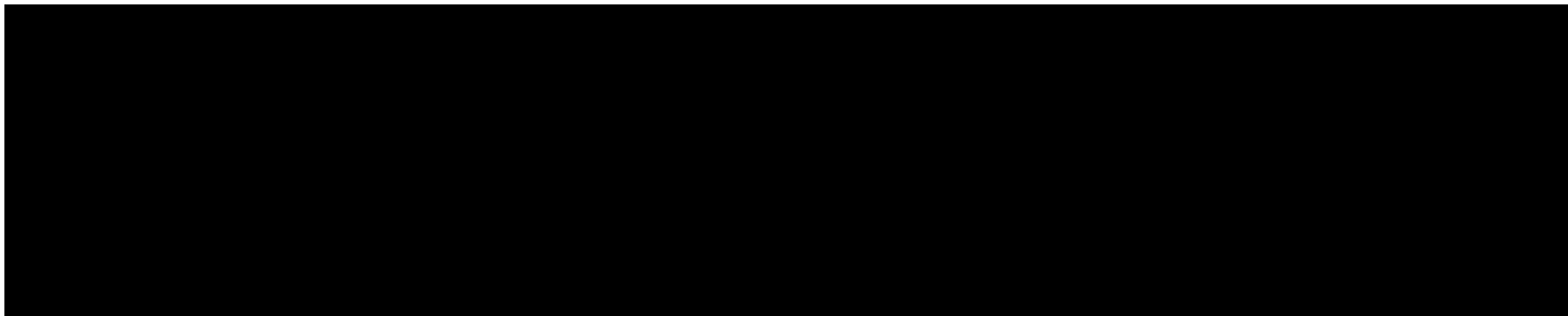
(1) GOOG-RDGZ-00184247

(2) GOOG-RDGZ-00067396-438 at 403 See also Report Section 7 1 2

*Rodriguez et al v. Google LLC et al.*

Schedule 8.1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 8.2.

(2) GOOG-RDGZ-00185743 at tab "Data."



*Rodriguez et al v. Google LLC et al.*

Schedule 8.2

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

**Notes:**

(1) GOOG-RDGZ-00185743 at tab "Data."

(2) Schedule 8.3.

*Rodriguez et al v. Google LLC et al.*

2019 - 2021

Schedule 8.3

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

- (1) 2019 at GOOG-RDGZ-00188768 at tab "Matrix " 2020 and 2021 at GOOG-RDGZ-00188768 at tab " " 2020 and 2021 revenues are forecast by Google  
(2) 2019 at GOOG-RDGZ-00188768 at tab "Matrix " 2020 and 2021 at GOOG-RDGZ-00188768 at tab " " 2020 and 2021 revenues are forecast by Google

Rodriguez et al v. Google LLC et al.

**U.S. SHARE OF TOTAL ALPHABET REVENUE**

Schedule 9.1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

	<b>2015</b> (1)	<b>2016</b> (2)	<b>2017</b> (3)	<b>2018</b> (3)	<b>2019</b> (4)	<b>2020</b> (4)	<b>2021</b> (4)	<b>2022</b> (5)
Total Alphabet Revenue	\$74,989,000,000	\$90,272,000,000	\$110,855,000,000	\$136,819,000,000	\$161,857,000,000	\$182,527,000,000	\$257,637,000,000	\$282,836,000,000
U S Alphabet Revenue	\$34,810,000,000	\$42,781,000,000	\$52,449,000,000	\$63,269,000,000	\$74,843,000,000	\$85,014,000,000	\$117,854,000,000	\$134,814,000,000
U S Share of Total Alphabet Revenue	<u>46.42%</u>	<u>47.39%</u>	<u>47.31%</u>	<u>46.24%</u>	<u>46.24%</u>	<u>46.58%</u>	<u>45.74%</u>	<u>47.67%</u>
YoY U.S. Alphabet Revenue Growth	N/A	22.90%	22.60%	20.63%	18.29%	13.59%	38.63%	14.39%

**Notes:**

(1) Total and U S Alphabet revenue per Alphabet Form 10-K for the fiscal year ended December 31, 2016, p. 81

(2) Total and U S Alphabet revenue per Alphabet Form 10-K for the fiscal year ended December 31, 2018, p. 56

(3) Total and U S Alphabet revenue per Alphabet Form 10-K for the fiscal year ended December 31, 2019, p. 61

(4) Total and U S Alphabet revenue per Alphabet Form 10-K for the fiscal year ended December 31, 2021, p. 61

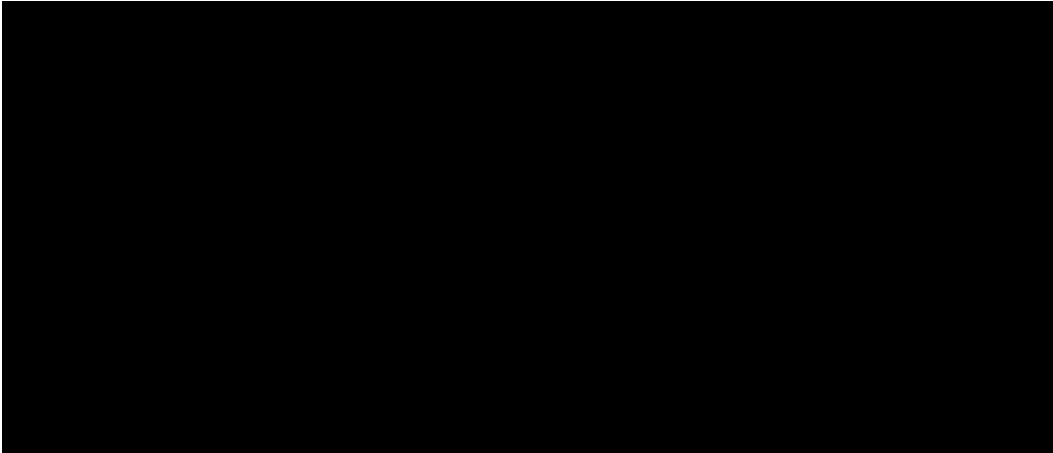
(5) Total and U S Alphabet revenue per Alphabet Form 10-K for the fiscal year ended December 31, 2022, p. 59

*Rodriguez et al v. Google LLC et al.*

**ACTUAL DAMAGES THROUGH DECEMBER 2022**

Schedule 10 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Schedule 10 3

(2) Schedule 10 2

(3) Report Section 8 2 See also Schedule 12 2

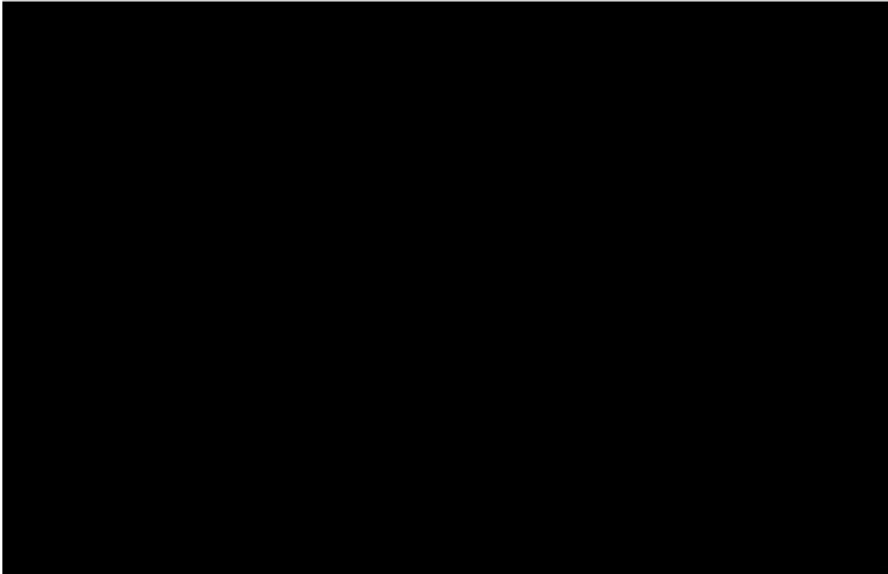
(4) Report Section 8 1 4

*Rodriguez et al v. Google LLC et al.*

**ESTIMATED CLASS MEMBERS THROUGH DECEMBER 2022 - AGES 18+**

Schedule 10.2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

(1) Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021, Census Bureau

(2) Pew Research, "Internet Use Over Time" available at <https://www.pewresearch.org/internet/fact-sheet/internet-broadband/>

(3) Schedule 12.5

(4) Schedule 12.4

(5) Schedule 12.7

*Rodriguez et al v. Google LLC et al.*

**ESTIMATED CLASS MEMBERS THROUGH DECEMBER 2022 - AGES 10-17**

Schedule 10.3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



**Notes:**

- (1) Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States: April 1, 2020 to July 1, 2021, Census Bureau
- (2) Children's Internet Access At Home per National Center for Education Statistics available at <https://nces.ed.gov/programs/coe/indicator/cch/home-internet-access>
- (3) Schedule 10.4
- (4) Schedule 12.4
- (5) Schedule 12.7



*Rodriguez et al v. Google LLC et al.*

**SHARE OF INTERNET USERS AGES 10-17 WITH SMARTPHONES**

Schedule 10.4

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

<b>Internet User Age</b>	<b>2021</b>
10	42%
11	37%
12	71%
13	70%
14	91%
15	86%
16	90%
17	97%
Average Share of Internet Users (Ages 10-17) with Smartphones	<u>73%</u>

**Note:**

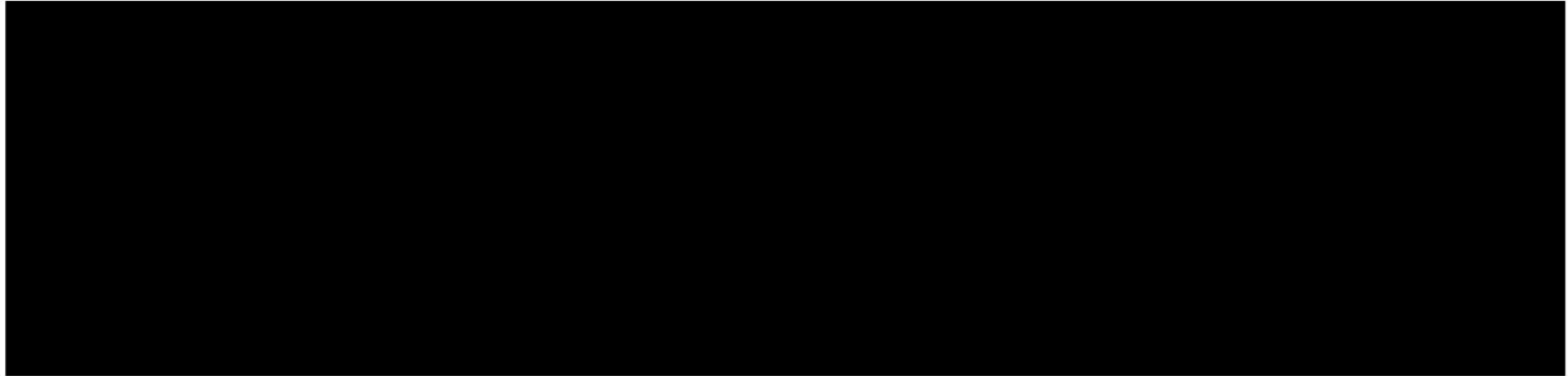
"The Common Sense Census: Media Use by Teens and Tweens, 2021" available at [https://www.common sense media.org/sites/default/files/research/report/8-18-census-integrated-report-final-web\\_0.pdf](https://www.common sense media.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf)

*Rodriguez et al v. Google LLC et al.*

[REDACTED] - JULY 1, 2016 THROUGH DECEMBER 31, 2022

Schedule 11.1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 13.1

(2) Schedule 12.1

(3) Schedule 12.5

*Rodriguez et al v. Google LLC et al.*

**AVERAGE NUMBER OF GMAIL ACCOUNTS PER GMAIL ACCOUNT HOLDER PER KEEGAN SURVEY RESULTS**

Schedule 12.1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

<b>Number of Gmail Accounts</b>	<b>Number of Respondents</b>	<b>Total Gmail Accounts</b>	<b>Average Number of Gmail Accounts per Gmail Account Holder</b>
1	433	433	N/A
2	251	502	N/A
3	91	273	N/A
4	28	112	N/A
5 or more	32	160	N/A
Total	835	1,480	1.77

**Note:**

Keegan Survey Results, Question No. 12. Responses indicating "5 or more" accounts have been counted as 5 accounts.

*Rodriguez et al v. Google LLC et al.*

**AVERAGE NUMBER OF MOBILE DEVICES PER PERSON PER KEEGAN SURVEY RESULTS**

Schedule 12.2

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

	<u>iOS (1)</u>	<u>Android (1)</u>	<u>Non-User or Don't Know (2)</u>	<u>Total</u>
Mobile Phones	576	665	0	1,241
Tablets	<u>355</u>	<u>339</u>	<u>0</u>	<u>694</u>
Total Devices	931	1,004	0	1,935
Number of Respondents	<u>997</u>	<u>997</u>	<u>42</u>	<u>1,039</u>
Average Number of Mobile Devices per Person	<u>0.93</u>	<u>1.01</u>	<u>N/A</u>	<u>1.86</u>

**Notes:**

(1) Schedule 12.3

(2) Keegan Survey Results, Question No. 7

Rodriguez et al v. Google LLC et al.

**AVERAGE NUMBER OF MOBILE DEVICES PER SMARTPHONE USER PER KEEGAN SURVEY RESULTS**

Schedule 12.3

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

iPhone			
Number of Devices	Number of Respondents	Total iPhone	Average Number of Devices per Person
0	486	0	N/A
1	459	459	N/A
2	39	78	N/A
3 or more	13	39	N/A
Total - iPhone	997	576	0.578

iPad			
Number of Devices	Number of Respondents	Total iPad	Average Number of Devices per Person
0	685	0	N/A
1	276	276	N/A
2	29	58	N/A
3 or more	7	21	N/A
Total - iPad	997	355	0.356

Android Phone			
Number of Devices	Number of Respondents	Total Android Phone	Average Number of Devices per Person
0	431	0	N/A
1	488	488	N/A
2	57	114	N/A
3 or more	21	63	N/A
Total - Android Phone	997	665	0.667

Android Tablet			
Number of Devices	Number of Respondents	Total Android Tablet	Average Number of Devices per Person
0	699	0	N/A
1	264	264	N/A
2	27	54	N/A
3 or more	7	21	N/A
Total - Android Tablet	997	339	0.340
Total - All Devices	997	1,935	1.941

**Note:**

Keegan Survey Results, Question Nos. 14, 15, 16, and 17. Responses indicating "3 or more" devices have been counted as 3 devices.

*Rodriguez et al v. Google LLC et al.*

**PERCENT OF SMARTPHONE USERS WHO HAVE ONE OR MORE GMAIL ACCOUNTS PER KEEGAN SURVEY RESULTS**

Schedule 12.4

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

<b>Keegan Survey Results Question No. 11</b>	<b>Number of Respondents</b>	<b>Percent of Respondents</b>
I do have one or more Gmail accounts	838	84.05%
I do not have one or more Gmail accounts	143	14.34%
Don't know	16	1.60%
Total	997	100.00%

**Note:**

Keegan Survey Results, Question No. 11



*Rodriguez et al v. Google LLC et al.*

**PERCENT OF INTERNET USERS WHO HAVE A SMARTPHONE FOR PERSONAL USE PER KEEGAN SURVEY RESULTS**

Schedule 12.5

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

<b>Keegan Survey Results Question No. 7</b>	<b>Number of Respondents</b>	<b>Percent of Respondents</b>
I do currently have a smartphone for my own personal use	997	95.96%
I do not currently have a smartphone for my own personal use	34	3.27%
Don't know	8	0.77%
Total	1039	100.00%

**Note:**

Keegan Survey Results, Question No. 7

*Rodriguez et al v. Google LLC et al.*

**OPERATING SYSTEM MARKET SHARE PER KEEGAN SURVEY RESULTS**

Schedule 12.6

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

<b>Keegan Survey Results Question No. 8</b>	<b>Number of Respondents</b>	<b>Percent of Respondents</b>
iOS (Apple iPhone)	480	48.14%
Android (Samsung, Google Pixel, etc )	508	50.95%
Other (Windows, Blackberry, etc )	1	0.10%
Don't know	8	0.80%
Total	<u>997</u>	<u>100.00%</u>

**Note:**

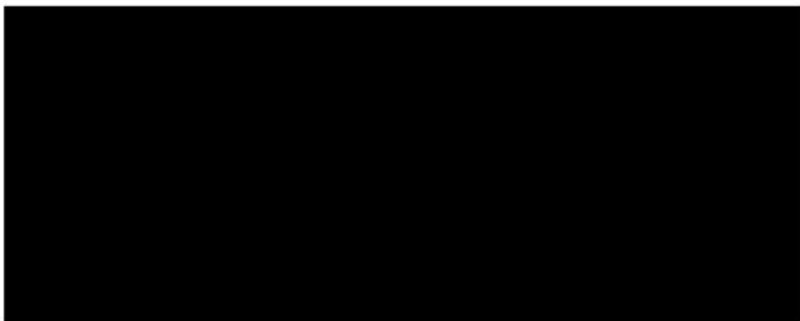
Keegan Survey Results, Question No. 8

*Rodriguez et al v. Google LLC et al.*

[REDACTED] : JULY 27, 2016 - JULY 27, 2020

Schedule 12.7

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Source:

GOOG-RDGZ-00187010 at tab "SWAA" See also, Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos. 12, 16, & 17), Supplemental Response to Interrogatory No. 12, p. 6

[REDACTED]  
Schedule 13.1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Note:

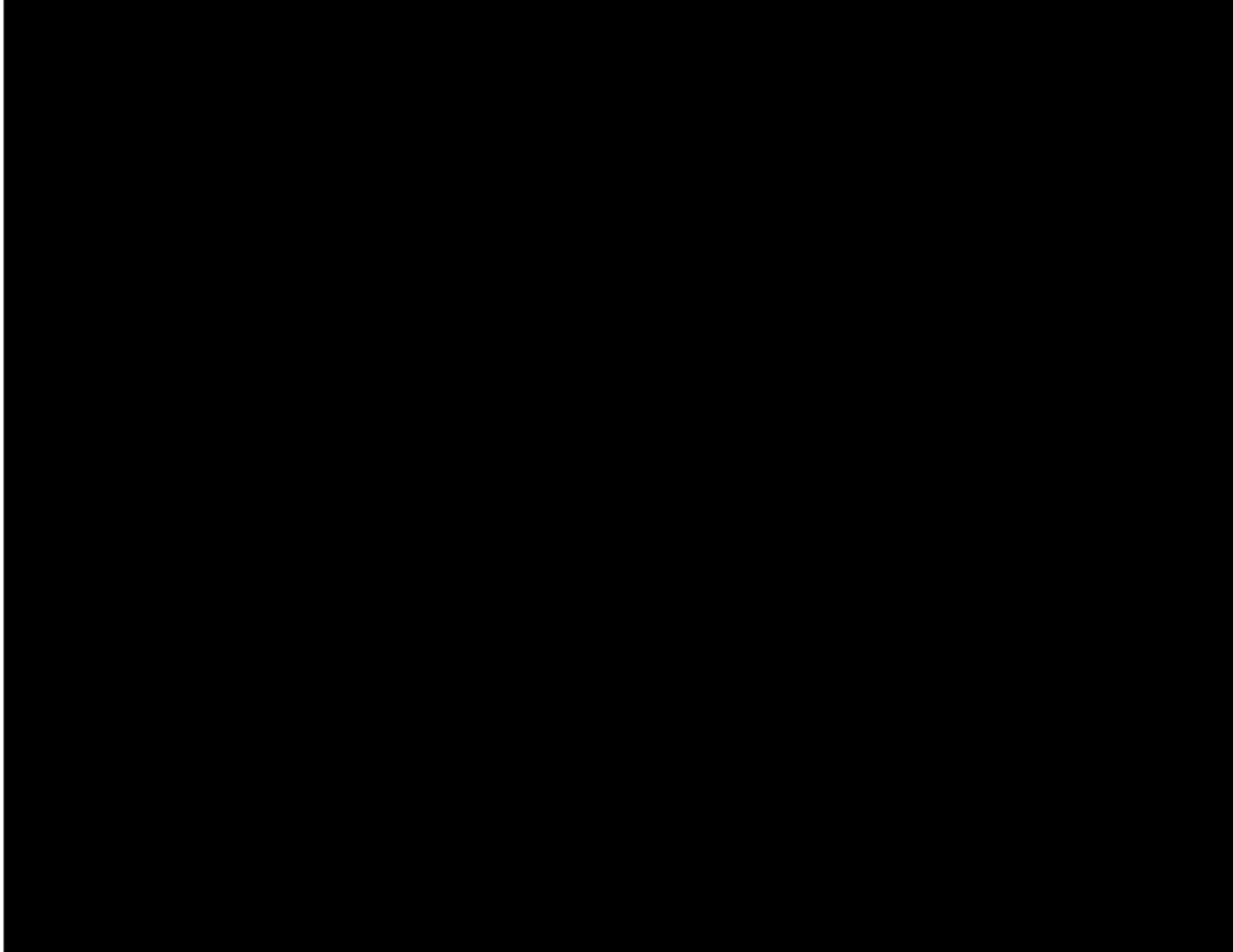
Schedule 13.2 (two page schedule)

*Rodriguez et al v. Google LLC et al.*

**SUMMARY OF GOOGLE U.S. ACTIVE ACCOUNT DATA**

Schedule 13.2 (two page schedule)

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

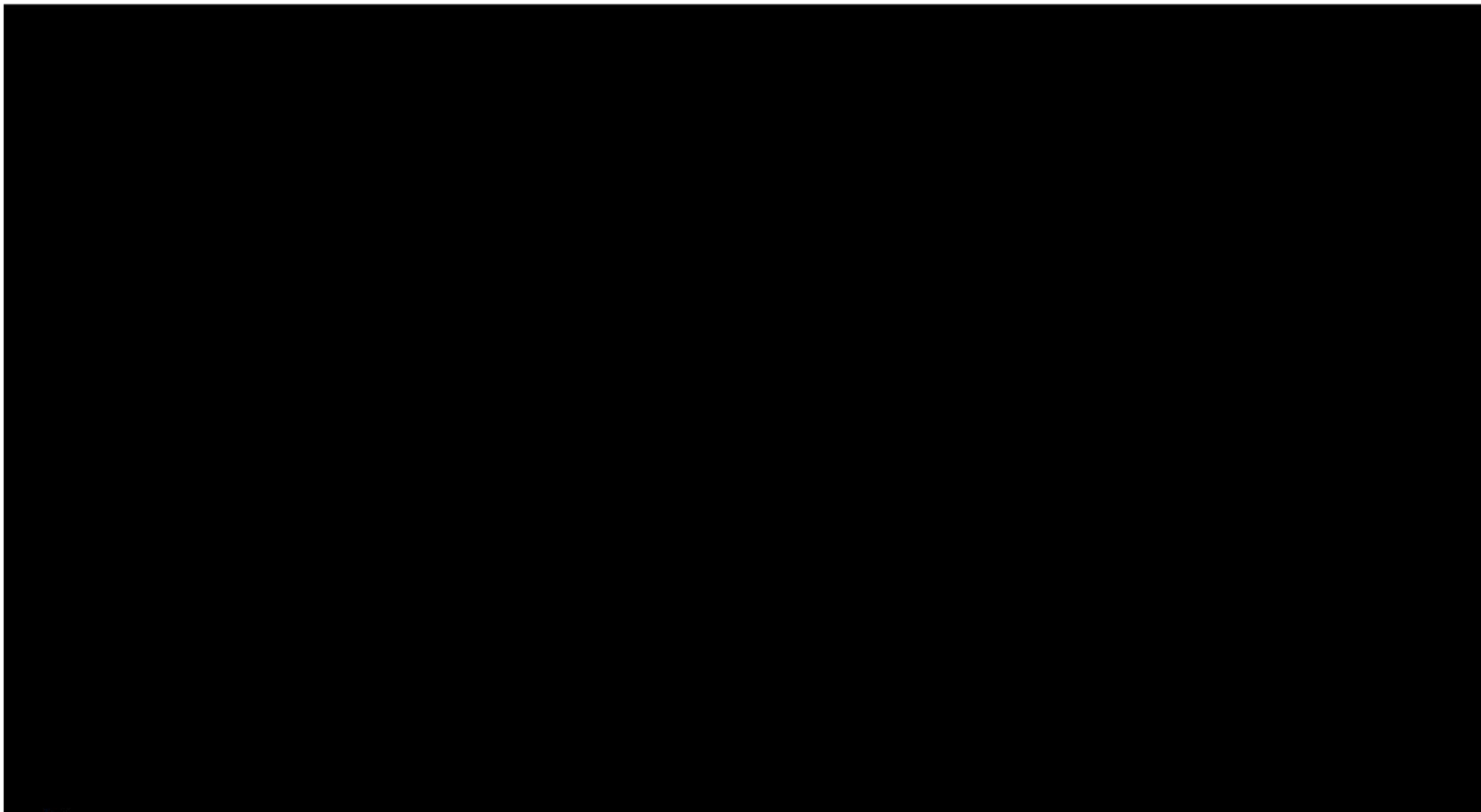


*Rodriguez et al v. Google LLC et al.*

**SUMMARY OF GOOGLE U.S. ACTIVE ACCOUNT DATA**

Schedule 13.2 (two page schedule)

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



Notes:

(1) October 2022 held constant for November and December 2022. Data assumed to be U.S.-specific. See Report Section 6.6

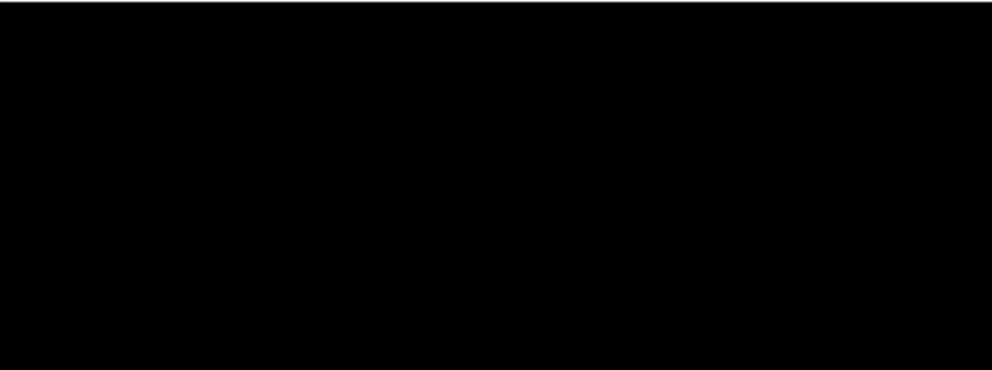
(2) GOOG-RDGZ-00204475, tab "Sheet1 "

[REDACTED]

*Rodriguez et al v. Google LLC et al.*

Schedule 14.1

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Source:

GOOG-RDGZ-00188768 at tab "Matrix "



*Rodriguez et al v. Google LLC et al.*

Schedule 15.1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Source:**

GOOG-RDGZ-00188768 at tab "Matrix."

*Rodriguez et al v. Google LLC et al.*

SUMMARY - [REDACTED]

Schedule 16 1

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**



Notes:

(1) Schedule 1 1

(2) Schedule 2 2

(3) Schedule 3 4 [REDACTED]

(4) Schedule 4 4 [REDACTED]

Rodriguez et al v. Google LLC et al.

SUMMARY - UNJUST ENRICHMENT BY PRODUCT - [REDACTED]

Schedule 1 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

	<u>Scenario One</u>	<u>Scenario Two</u>
App Promo	[REDACTED]	
AdMob		
Ad Manager		
Total		

Note:

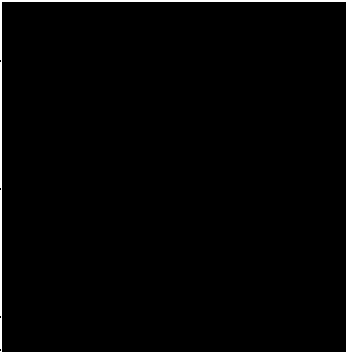
Schedule 1 2B

Rodriguez et al v. Google LLC et al.

SUMMARY - UNJUST ENRICHMENT SCENARIOS ONE AND TWO BY PRODUCT AND CLASS - [REDACTED]

Schedule 1 2B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

	<u>Scenario One (1)</u>	<u>Scenario Two (2)</u>
<i>App Promo</i>		
Class 1		
Class 2		
Total		
<i>AdMob</i>		
Class 1		
Class 2		
Total		
<i>Ad Manager</i>		
Class 1		
Class 2		
Total		
Total		

Notes:

(1) Schedule 1 3B

(2) Schedule 1 4B

*Rodriguez et al v. Google LLC et al.*

Schedule 1 3B

**HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY**

**Notes:**

- (1) Schedule 2 1B
- (2) Schedule 3 3B
- (3) Schedule 4 3B
- (4) Schedule 1 5

*Rodriguez et al v. Google LLC et al.*

EXAMPLE APPORTIONMENT OF UNJUST ENRICHMENT TO CLASSES - SCENARIO TWO - [REDACTED]

Schedule 1 4B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Schedule 2 1B
- (2) Schedule 3 1B
- (3) Schedule 4 1B
- (4) Schedule 1 5

*Rodriguez et al v. Google LLC et al.*

APP PROMO TOTAL UNJUST ENRICHMENT - [REDACTED]

Schedule 2 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 2 2B

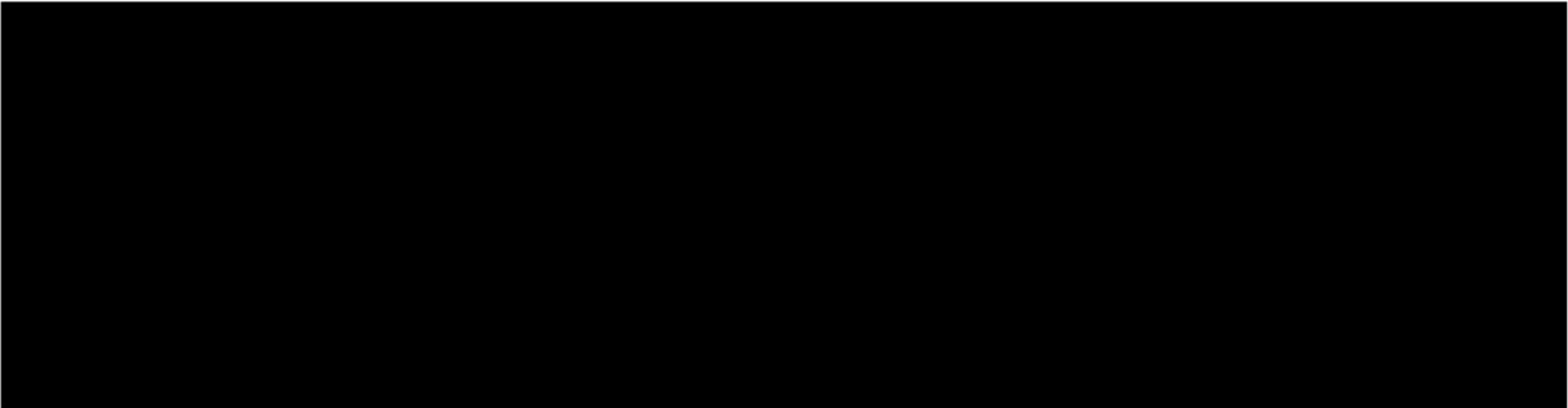
(2) Defendant Google LLC's Supplemental Objections and Responses to Plaintiffs' Interrogatories, Set Six (Nos 12, 16, &17), Supplemental Response to ROG 17, pp 15-16




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Schedule 2 2B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

- (1) 2018-2020 per GOOG-RDGZ-00184247 2021 per GOOG-RDGZ-00185744
- (2) July 2016 through December 2016 per Schedule 7 2 2022 calculated by applying assumed year over year growth rate to 2021 value
- (3) 2017 - 2021 
- (4) Schedule 15 1
- (5) Schedule 13 1B

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ADMOB TOTAL UNJUST ENRICHMENT - SCENARIO 2 - [REDACTED]

Schedule 3 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:


(1) Schedule 3 3B

(2) Schedule 3 2B

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Schedule 3.2B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 3.4B.


(2) Schedule 3.3B.

(3) Schedule 14.1. See also Report Section 7.2.2.

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Schedule 3 3B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



(1) Schedule 3 4B

(2) GOOG-RDGZ-00188469-491 at 475 Represented on source document as 

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Schedule 3 4B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Schedule 6 1
- (2) Schedule 5 1
- (3) Schedule 15 1
- (4) Schedule 13 1B

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AD MANAGER TOTAL UNJUST ENRICHMENT - SCENARIO 2 - [REDACTED]

Schedule 4 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 4 3B

(2) Schedule 4 2B

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Schedule 4.3B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY


Notes:

- (1) Schedule 4.4B.
- (2) Schedule 4.3B.
- (3) Schedule 14.1. See also Report Section 7.2.3.

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Schedule 4 3B


HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

(1) Schedule 4 4B

(2) GOOG-RDGZ-00188469-491 at 475 Represented on source document

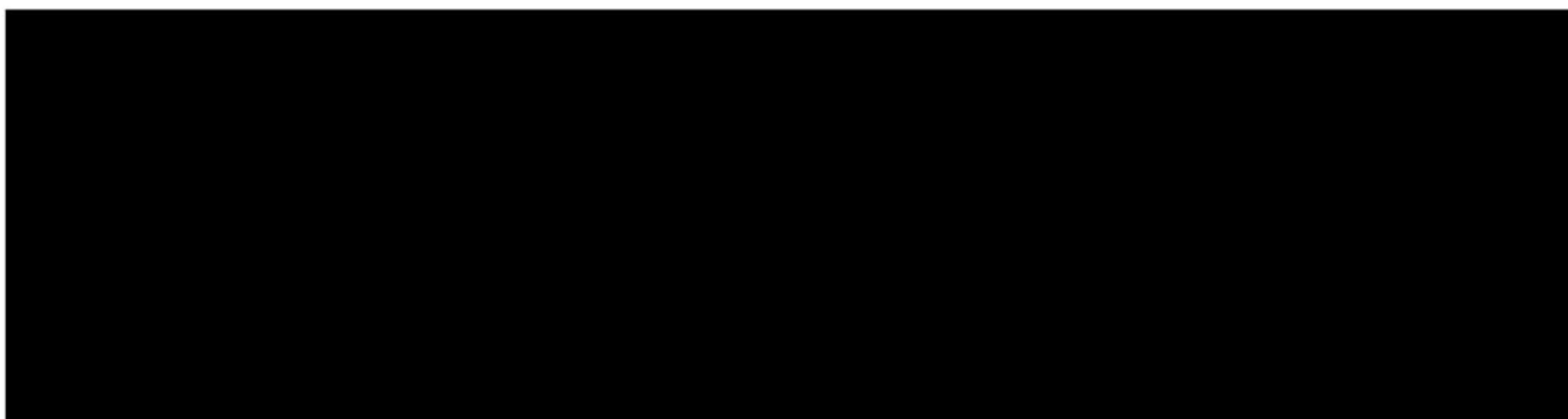




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Schedule 4 4B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY



Notes:

- (1) Schedule 5 2
- (2) Schedule 5 1
- (3) Schedule 15 1
- (4) Schedule 13 1B

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Schedule 11 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Schedule 13 1B
- (2) Schedule 12 1
- (3) Schedule 12 5

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Schedule 13 1B

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

Notes:

- (1) Schedule 13 2 (two page schedule)
- (2) Partial year-2016 and 2017 held equal to 2018
- (3) Partial year-2016 and 2017